

**Attainments
of
Primary School Children
in
Various States**

1

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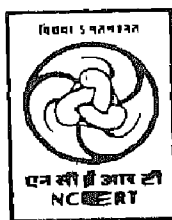
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Foreword

Periodical assessment of the learning achievement of children at various stages of school education is very important for identifying the nature of inputs required to improve the quality of education. The study entitled 'Attainment of Primary School Children in Various States' was initiated in April 1989 with the major focus on assessing the attainment in language and mathematics of primary school children in Classes IV and V. This study was carried out in 23 States of India, including the National Capital Territory of Delhi.

The findings of the study have a number of implications for language and mathematics achievement amongst the primary school children. The findings also reflect on the quality of teaching and learning. The outcome of this study should lead to planning afresh the whole process of curriculum transaction and may simultaneously call for serious interventions in teacher education. It would be appropriate that all future in-service education programmes should take note of the current status of achievement of the children and should design appropriate programmes to enhance the competency of teachers in improving the quality of attainment of the children. If this becomes the main focus of utilisation of the findings of this study, it would have served its purpose.

The study was undertaken under the direction of an eminent researcher, Prof. (Ms) Sneh Lata Shukla, formerly Head, Department of Teacher Education, in the NCERT. I express my gratitude to her for undertaking this responsibility on behalf of the NCERT and also greatly appreciate the contributions of other colleagues of mine who worked with her on this study.

I also acknowledge the support and cooperation of the State Coordinators who undertook the responsibility of field work — selection of sample of schools, development of tools, and collection of data. Indeed, they acted as extended staff of the project team. The active support of the State governments, particularly of the SCERTs/SIEs and Departments of Education, has been a great strength to us in the conduct of this study.

A. K. SHARMA
Director

National Council of Educational
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GANDHIJI'S TALISMAN

"I will give you a talisman. Whenever you are in doubt or when the self becomes too much with you, apply the following test :

Recall the face of the poorest and the weakest man whom you may have seen and ask yourself if the step you contemplate is going to be of any use to him. Will he gain anything by it ? Will it restore him to a control over his own life and destiny ? In other words, will it lead to Swaraj for the hungry and spiritually starving millions ?

Then you will find your doubts and your self melting away."

M.K. Gandhi

Preface

The National Council of Educational Research and Training has been conducting periodic surveys in the area of school education for more than three decades. From these surveys highly useful information becomes available to decision-makers, both for planning and evaluating the growth of education. These surveys, however, have been confined to availability of facilities such as institutions, buildings, teachers, laboratories, guidance services, and incentive schemes, to mention some of these. Utilisation of facilities in terms of enrolment has been a major variable. The need for surveys of qualitative change in pupil learning has been felt for long. Such surveys become very pertinent in the light of investments in improved facilities, periodic revision of curricula, improvement of textbooks, and provision of more facilities for teacher education. The first big step in this direction was taken in the mid-sixties when the NCERT conducted a Survey of Achievement in Mathematics at three stages of school education. That was 25 years ago. However, periodic assessment of pupil-learning is needed to help decision-makers to assess their policies and modify them wherever necessary. It also enables educationalists and teachers to identify weaknesses in planning and in the transaction of teaching-learning and take appropriate action for the same.

While the States conduct such investigations for evaluating their own systems, a country-wide exercise could only be undertaken by a national institution like the NCERT. Two surveys were initiated by it in 1989, one each at the secondary and primary levels. The two are somewhat different in the nature of the investigations carried out; nevertheless, both provide useful information about the state of pupil-learning in different parts of the country.

This survey has added substantially to the limited information available about levels of learning in primary schools, differences over the States and between different groups within a State, such as boy/girl, urban/rural, or groups on the basis of caste. Identification of correlates of achievement, though attempted, has not produced any reasonably clear picture.

Regional differences in achievement at school level within States have been known — may be more at the secondary level resulting from the common Board examinations, but the information regarding differences between States has been limited. Low achievement in some of the southern States has not been taken note of very clearly, this survey has highlighted it. The direction of differences between achievement of groups, when divided over gender, area of residence, namely, rural or urban and caste, varies over the States. Intensive studies that include sociological and economic variables contributing to such differences could throw more light on this.

The finding regarding better achievement of the most numerous caste group in a State, regardless of its 'social' status, needs to be heeded by textbook writers, teachers and administrators.

The lower achievement of pupils of Class V as compared to those of Class IV needs intensive investigation. Earlier surveys have also pointed out deterioration in achievement, but in these studies the lower percentage score of children in higher grades was based on tests designed on the curriculum for respective grades. The finding in this survey is based on a common test battery attempted by children of Classes IV and V and demands the serious attention of administrators and teachers.

Higher initial education of the teachers, as at present did not have any direct impact

but in-service education of the teachers did seem to improve the achievement of the pupils. These variables, perhaps, cannot be interpreted simply by their nomenclatures, there could be other variables behind the names. The quality of 'higher' education with which some of these teachers come to teach primary school or the involvement of the State educational authority that organises in-service education are some such examples.

Some consistency regarding the influence of home-related variables on achievement was noticed but the same cannot be said about the teacher and school-related variables.

The findings of this survey have raised questions with regard to common decisions or selection tests for the entire country as also about the competencies of the teachers.

The gap between the survey conducted in 1966 and the present one conducted in 1991 is too large to provide a meaningful profile of improvement; there is need for more frequent/periodic surveys. It is hoped that this would become a regular activity of the NCERT.

I am very grateful to the then Director and Joint Director of the NCERT, Dr P.L. Malhotra and Prof. A.K. Jalaludin, for having given me the opportunity to carry out this study. It was planned and approved by the NCERT in 1983 but could not be undertaken then due to several reasons. I am equally grateful to Dr A.K. Gopalan and Prof. A.K. Sharma who continued their support till the study was completed. The work was greatly facilitated by the active cooperation of the successive Heads of Department of Measurement and Evaluation, Prof. H.S. Srivastava, Prof. P.M. Patel, Shri J.P. Agarwal and Prof. R. M. Kalra. I am indebted to them.

My senior colleagues, Dr V.P. Garg, Dr V.K. Jain, Dr Sarla Rajput and Shri. O.P. Arora, worked all along with me. I cannot say they helped me, we worked together. I would particularly like to mention the major contribution of Dr V.K. Jain in looking after all aspects related to the sampling exercise, which involved a long and continued effort at the beginning stages of the study, and for assuming the major responsibility for the analysis of data. Dr V.P. Garg, along with other work, looked after most of the administrative aspects, too. Smt. Rajput helped in the development of tools in particular. Shri Arora developed the programmes for analyses by the computer. A large project like this one involves a great deal of work which cannot be given any name but needs to be done nevertheless, and it is difficult to acknowledge all contributions.

A country-wide study like this one cannot be carried out without the active support of the State governments. I am grateful to all of them, particularly to the SCERTs/SIEs and the Departments of Education for providing the necessary manpower and other facilities. State Coordinators shared all the work beginning with that related to selection of the sample of schools, and on to the development of tools and, the most difficult of all, collection of data from primary schools spread over urban and rural areas. They also shouldered the responsibility of getting the data recorded on the computer. They were in a way members of the extended project team. I would like to record my appreciation of their contribution. I am grateful to the large team of the field staff, both at Delhi and in the States, for collecting, checking and tabulating the data.

I am also grateful to the Section Officers, Shriyut Harbhagwan and S.D. Singh, and their colleagues for providing all the help required. Shri R.S. Sharma, the Assistant Programme Coordinator rendered help in executing schedules, arranging work-meetings, managing finances and maintaining contacts with the States. Smt. Lila Makhija, P.A., typed a large portion of the first draft of this bulky report, her help is highly appreciated. I thank all of them sincerely.

SNEHLATA SHUKLA

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PART I

Introduction

Efforts Made in the Post-Independence Era

When India attained Independence, only a small proportion of young children were attending school. According to the statistics available from the 1951 census, 16.7% of the population was literate and 42.6% children of the age-group 6 to 14 were enrolled in schools. Expansion of elementary education was given the highest priority in free India. According to the Constitution of India, the goal of universalisation of elementary education was to be attained by 1960¹, and a substantial effort has been made both for its expansion and for the improvement of the quality of education.

The number of schools rose from 2.10 lakh in 1950-51 to 5.48 lakh in 1988-89, and the teachers more than tripled from 5.38 to 16.03 lakh during the same period². More buildings were constructed for schools so that children could study all through the academic year without being interrupted by inhospitable weather. To make attending school comfortable and more profitable, facilities such as drinking water, urinals, furniture for students and teachers, blackboards, chalk sticks and dusters, and books in the library were also augmented. During the First Plan, an enthusiastic beginning was made by allocating 55% of the total budget for education to the elementary sector, this later settled to around 34%, with small deviations in subsequent Plans.

Simultaneously, efforts were made to enrol more children in schools. The first step of opening a primary school within reach of every young child was supported by special drives to persuade children to join school. Several incentive schemes (these could also be called welfare schemes) such as midday meals, supply of textbooks, free uniforms and scholarships were offered to the socially disadvantaged groups such as SC, ST and girls. In the Sixth Plan the familiar strategies of opening more schools and intensive drives for enrolment were supported by the expansion of non-formal education in

a big way towards the achievement of this objective. Several other steps were also taken at different points of time, reduction in school hours, multiple-entry points, and helping the learner from the non-formal system to enter the formal school, were some of them.

Thus the first major effort was to facilitate entry into the school system. It was, however, noticed quite early that a very large percentage of children who enrolled dropped out of the system before they could attain even literacy — i.e., literacy which could be expected to be lifelong. Even as late as 1977-78, nearly 60% of all children who were enrolled in Class I dropped out of the system by the time they reached Class V³. Out of this, a fairly large group left school before they reached Class III. To make room for late developers and to reduce discouragement arising out of failure, a 'No Detention Policy' for automatic promotion was recommended for at least the first two years of schooling, and longer if a State would agree to it. The corresponding drop-out rate reduced to 48% in 1985-86 — not a very big achievement in the eight-year period.

So much for the expansion of primary education. As of today, the percentage of cohort joining the school has more than doubled since Independence, the rate of adult literacy is nearly 3 times as high.

Attention was also paid to improving the quality of education. The beginning was made in setting up two successive Commissions for recommending improvement of tertiary and secondary education, in 1948 and 1952, respectively. It was followed by the Kothari Commission (1964-66) which looked at and made recommendations for improvement of education at all levels. There were suggestions for renewal of curricula, improvement of teacher education programmes and reforms in several other aspects.

Simultaneously, several Bureaus for revision of curricula, development of model textbooks, reforms in the

1 That this goal has eluded us to-date is a different matter.

2 (a) *A Handbook of Educational and Allied Statistics 1980-81*, MHRD, GOI, 1983.

(b) *Selected Educational Statistics 1988-89*, p.84, MHRD, GOI, 1990.

3 *Report of The Working Group on Elementary Education Seventh Five Year Plan 1985-1990*, NIEPA, 1990, p. 129.

examination system, as well as extension centres for in-service education of teachers were set up. These were later (1961) brought together as the National Council of Educational Research and Training (NCERT). The NCERT worked in all areas of education such as development of curricula, production of model textbooks supported by guide books for teachers and workbooks for pupils, reforms in examination, teacher education—both pre-service and in-service. It supported its work by research and extension. Sister institutions by the name of State Council(s) of Educational Research and Training were created in the States. Later, a Central Institute of Educational Technology came into being within the NCERT to promote the use of modern technologies in education. It was also supported by State-level cells or State Institute of Educational Technology.

The National Institute of Educational Planning and Administration (NIEPA) was set up to lend support to administrators. The latest in the list are District Institute(s) of Education and Training. Several voluntary agencies also worked for improving the quality of education, particularly at the primary level.

Though work in most places began with secondary education, the importance of changes at the primary level was recognised quite early and a fair amount of attention was paid to this sector. A unit for pre-school education in the NCERT was strengthened to become a strong Department of Pre-School and Elementary Education. During the late seventies and early eighties, many experiments were also undertaken to try out new inputs and approaches to support and improve primary education. Teaching science in the Satellite Instructional Television Experiment in six States, the use of Radio in Teaching First Language in Rajasthan, followed by the use of audio-tapes for a similar objective in Madhya Pradesh, Primary Education and Curriculum Renewal in selected schools in 22 States, and Comprehensive Access to Primary Education for out-of-school children are some of these. Several experiments were evaluated for their contribution in improving retention and achievement. In some cases, these were extended to larger groups but, once extended, some of the special inputs, particularly inspiration, enthusiasm, and direct interaction with experts, tend to get reduced and the special inputs become as routine as the traditional textbooks, blackboards, etc. Evaluation was usually not repeated at this stage.

In the National Policy on Education adopted in 1986, attention was paid both to universalisation and improvement of quality of primary education by recommending more material inputs, including a minimum of 'usable in all weather' space, at least two teachers one of whom

was to be a woman. This is to mention only a few of the steps recommended to extend and improve primary education. In short, a great deal of effort has been invested in extending and improving the quality of primary education but evaluation of the impact of these inputs has not been systematic. The NCERT has been conducting periodic surveys to collect data regarding availability of schools, and teachers, number of pupils enrolled and attending schools, and several other variables which would provide information regarding the targets reached. The planners use this information to assess achievement of universalisation of primary education in different geographical regions, for taking further steps. But information regarding improvement in the quality of learning has not been available on any large scale. While it made sense to begin with assessment of needs for basic facilities for achievement of universalisation of elementary education and provision of the same, the end product, namely, learning by the pupils, would remain the main objective.

There has been occasional expression of dissatisfaction with the achievement levels of children. Most of it has not been on the basis of any systematic investigations. The planners and the educationists have felt dissatisfied with whatever little evidence of learning of the young pupils is brought to light. Some studies have been conducted in the States throwing occasional light on the status of achievements of primary school children; very limited information is available regarding comparisons between States. The scope of the investigations undertaken by research scholars and State Councils of Educational Research and Training remains confined to the States where they are located. While regional differences within a State may be brought out in some studies, inter-state comparisons would remain the concern of national agencies like the NCERT, NIEPA, etc.

Some evidence available from home and abroad is summarised below.

What is Known from Research?

The present study is mainly concerned about three aspects of primary education, namely: (i) achievements of pupils in relation to curricular expectations, (ii) comparisons over the States, and (iii) the factors that could be related to the differences in achievement of pupils within or between States.

Some information regarding the achievement of pupils in primary schools was available from studies conducted in the NCERT and the States. The findings, in general, pointed to low levels of learning as also to the situation becoming worse as the children moved up the grade levels. Poor achievement of primary school was

reported in several studies conducted in Maharashtra, particularly by the Bombay Municipal Corporation

Three major studies undertaken in NCERT, involving several States, examined achievements of primary school children

An All India Survey of Achievement in Mathematics (Kulkarni, 1970) was conducted at three levels of education, viz, end of primary school (Class V) end of middle school (Class VIII) and end of secondary school. Common tests translated in 13 languages were administered on samples drawn from 15 States. The number of pupils varied from more than 28,000 at primary level to nearly 20,000 at the secondary level. The findings can be summarised as below

- Variation between States was quite high, State averages at primary level ranged from 26% to 48%. The same got reduced at middle and secondary level
- Regional differences within a State were also noticed.
- The direction of differences between urban/rural groups varied from State to State
- With very few exceptions, boys achieved higher than the girls
- Items categorised under Application and Logical Reasoning proved more difficult than those measuring Knowledge and Skill
- No relationship was found between school performance and teachers' qualifications

The author concluded, "It seems the most powerful variables are those which operate within the school like teaching methods, curriculum, etc., and those which are related to students' attitudes. The remoter variables like socio-economic conditions of the parents or school type, e.g., government or private, operate only to the extent they deliberately improve teaching-learning situations and help a student to build a positive attitude towards study."

The data of the study mentioned above were collected during 1967. More information became available—for different subjects though—after a short gap of three years from a smaller part of the country. In the series of studies conducted by the International Association for Evaluation of Educational Achievement, India participated in the measurement of achievement in two subjects, namely, mother tongue (Hindi) and science, at all the three levels, i.e., for children of ages 10+, 14+, and the last class of secondary school. The achievements of Indian children were very low. The same deteriorated over

the populations which could be considered equivalent roughly to grades. Home-related variables were found to be less significant in the higher grades. The same were also less significant with respect to differences in achievements than school- and teacher-related variables. The school variable tended to gain importance at the secondary level (Shukla, 1974)

This study was restricted only to the States (and groups of pupils) where Hindi was being used as medium of instruction. The data were pooled together to represent country statistics, comparisons between States were not made

Dave (1988) and his colleagues conducted an evaluation of achievements of primary school children studying in Classes I to IV in 22 States/Union Territories in the country. Although the main objective of the study was to compare the impact of inputs made available in a special project, named Primary Education Curriculum Renewal, some of its findings are relevant so far as the picture regarding achievement in schools in general is concerned, it had samples of pupils from 'non-project' schools varying from 1,800 in Class I to less than 200 in Class IV. Different tests appropriate for assessing levels of achievements in different grades were used. Thus the mean achievements, as reported, were not directly comparable over the grades. With this limitation in mind, the average percentage scores in non-project schools⁴ in the mother tongue were 63% in Class I, 53% in Class II, 39% in Class I, 64% in Class II, 49% in Class III and 27% in Class IV. The picture was similar in Environmental Studies I and II. Although the author interpreted this as satisfactory achievement on the part of the primary school children, the successive decline in averages was very glaring. Even by the standards set by Dave and his group, achievement in Class IV was unsatisfactory, being less than 34% both in language and in arithmetic. When seen along with the declining number of pupils from Class I to IV⁵ (from 1800 to approximately 190 only) it can only be called dismal.

Large differences between State means were observed in this study as well. The mean percentage score in language varied between 33 (Bihar) to 90 (Punjab) in Class I, 20 (Bihar) to 88 (Punjab) in Class II and 17 (HP) to 71 (Punjab) in Class III. In mathematics, the range of percentage averages was 35 (Bihar) to 89 (Punjab) in Class I, 41 (Bihar) to 93 (Punjab) in Class II, 15 (Bihar) to 76 (Tamil Nadu) in Class III and 32 (H.P) to 48 (Mizoram) in Class IV⁶.

4 Considered here as representative of the general population of schools

5 As the testing was undertaken simultaneously, the number of pupils in Class IV is not, strictly speaking, the leftover of 1,800 in Class I, the high attrition rate is likely to have affected this number.

6 Data from only two States was reported for Class IV.

Differences between States were noticed in achievements of primary school pupils in Bihar, Madhya Pradesh, Orissa, Andhra Pradesh, Rajasthan and Karnataka in the study.

Work regarding factors correlated with achievement of pupils at the primary stage has been reported by several studies. The findings are not always consistent with each other. Apart from the non-comparability of methods used in analysing and interpreting the data, the sub-populations could also be different. A study based on a sample from an urban area alone may end up with different findings compared to the one with a sample more representative of the total population of children of a State. Nevertheless, studying the summaries available in the four surveys of Research in Education brought out by the NCERT, the following variables were found to be positively related to pupil achievement: general ability and motivation of the pupil, availability of the teacher, i.e., one or less teacher per class group, level of general and professional education of the teacher, subject specialist in preference to the general teacher, facilities available in school, institutional climate and leadership of the headmaster. On the part of the children, having textbooks and doing homework regularly seemed to help. The urban groups tended to do better than the rural groups. There was no evidence of relationship between achievement and size of class and number of siblings.

Some findings from international studies would also be of interest to the reader of this survey. The International Association for Evaluation of Educational Achievement (IEA) has not only conducted several studies across countries but has also collaborated with other international agencies to compile the work done in the area of evaluation of pupil achievement. The same is available in several volumes brought out by IEA and other sponsoring agencies.

It can be said briefly that there was no consistency of pattern in relationships between achievement of pupils and school- and teacher-related variables. The same differed widely over the countries. There was some consistency in patterns in the developed and the developing countries. In the case of the latter, school-related variables exerted greater influence while in industrialised countries, student- and family-related variables were more influential. The influence of family background had a positive relationship with the level of economic development of the country. On the other hand, the percentage of variance explained by teacher-related variables was negatively correlated with the level of the country's de-

velopment. Textbooks turned out to be more important in low-income families, rural areas and families where parents' education was low.

In a review of research on relationship between teacher's training and student achievement, it was concluded by Husen, *et al.* (1978) that teacher characteristics had a positive impact on pupil achievement.

One could interpret the above comments. Generally speaking, the variation between homes would be higher than variation between schools. In richer countries, the variability in schools may become very small, i.e., when all (or most) schools are equipped rather well. On the other hand, the variability in the homes of a large segment of population in developing countries may remain restricted, particularly if the parents are not educated and a high proportion of the population is below the poverty line.

These findings are relevant in the present study to the extent that there are differences in the economic development of the States in the country. It may be mentioned that some of the contradictions in the findings of the studies from the States may be arising because of these reasons.

One study from Thailand may be given a special mention here. Satapanich (1982) found that the aggregate effects of SES and school characteristics were not the same for all regions and types of schools in the country. In addition, the effects were different for language and mathematics. In the light of these findings, the researcher expressed doubt about a uniform national policy to improve the quality of education in the country, a situation relevant to India as well.

This limited glance over the status of findings in the area points to the urgent need of more work in the country. In the light of more definite differences between the developed and developing countries, designing action policies on the information available from research conducted elsewhere could not only be futile but also counter-productive. Developing means of better communication of research findings between developing countries could be more helpful. It also points to the need for continued research as the economic/industrial status of the country is changing at a very fast rate.

Primary Education — The General Scene in 1989*

In most of the States, primary schools comprised Classes I to V. However, in Assam, Gujarat, Karnataka, Kerala, Maharashtra, Mizoram and Nagaland, the primary section had Classes I to IV, only Meghalaya was an exception with lower primary school ending at Class III. Only a

* The comments in this section are based on write-ups received from the 22 States and the Union Territory participating in this survey. These are not based on data received from the schools.

from the 22 States and the Union Territory participating in this

small proportion of primary classes were part of middle or secondary schools

Pre-primary education was available to a small minority, the exceptions were Sikkim, Delhi and Meghalaya, followed by Kerala and Haryana. Nearly all the States had private schools in urban areas catering to the needs of pre-school children. Rural children mainly attended centres run under ICDS; the number of such centres was quite high in Uttar Pradesh and Bihar.

States followed different policies regarding not detaining children in the beginning classes. While children were automatically promoted up to Class III in several States, Assam, Nagaland, Sikkim and Meghalaya examined and detained right from Class I children who did not achieve up to the expected levels. On the other extreme was Bihar, where children, regardless of their achievement, were promoted up to Class V. Kerala and Andhra Pradesh used percentage attendance as the criterion for promotion in the beginning grades. Wherever an examination was held, the requirement of minimum marks for promotion was quite low—about 35% only. One could say, in brief, that the total system was quite permissive to enable the children to move along the class-ladder. With the exception of Meghalaya, which held a public examination at the end of Class III, the last class of the lower primary school, no other State held an examination at the primary level where evaluation or certification was centralised. Arunachal Pradesh and Sikkim had systems of common question papers for the entire State for Class V but evaluation was done at the district levels. In several States, Zila Parishads or Block-level agencies administered a common examination for the last grade. In Assam, Tamil Nadu, Bihar, Andhra Pradesh and Karnataka, evaluation was conducted by schools only. Orissa held a special examination, probably for a small number of bright children, for awarding scholarships.

Most of the primary schools were being run by the State governments and local bodies, a few States also had a large number of private aided schools. As private aided schools followed the same curriculum and policies regarding recruitment of teachers etc., there could be differences only in the availability of facilities and management of inputs. Totally private schools were mainly in the urban areas and to the extent that they used English as medium of instruction, (where English was not the language of instruction in the whole State), the same were not part of the population of schools of this survey.

Children were admitted to Class I at the age of 5+ in two-thirds of the States; Bihar, Jammu, Madhya Pradesh,

Mizoram, Nagaland, Punjab and West Bengal admitted children at 6+. Students were not required to pay any fees in government managed or aided schools, particularly in Classes I and II, in later classes, a small contribution, usually a rupee per month, was collected towards specific funds.

Matriculation plus certificate of teacher training was the minimum required qualification for recruitment of teachers for primary schools. Andhra Pradesh, Madhya Pradesh, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal required a minimum of 12 years of general schooling for their primary teachers. Very few States recruited graduates—none required graduation as a minimum qualification. The pay-scales were fairly comparable over several States. In Kerala, Jammu, Karnataka and Tripura, the salaries of the teachers were lower than in other parts of the country.

Most school systems worked from May-June to April, with some vacation in between, there were some minor variations because of geographical conditions. A few States had their academic year from February to December.

Apparently, the primary school systems were quite comparable from State to State. Schools were managed mostly by State governments or local bodies, a few private schools were also aided by the governments. Children were admitted at 5+ or 6+, no tuition fee was charged. The minimum required qualifications for recruitment of teachers was 10 years of general education plus two years of training, with States now moving towards twelve years of general education. In a large number of States children were not detained in first two grades, after which schools held their own examinations. In the last grade of the primary schools, common question papers for the entire district in a rare case for the whole State, were being used perhaps to monitor minimum levels of learning.

The Present Study

This study was undertaken to assess the levels of achievement of children at the end of primary school in the mother tongue and in numeracy. These two areas of study being basic to further learning, it was decided to begin the study with these two subjects.

It is felt by many educationists that children seem to be more backward in the basic skills of reading, writing and numeracy in some States than in others. Unequal distribution of successful candidates in all-India competitions is often quoted as indirect evidence. The two studies quoted earlier, namely the All India Survey of Achievement in Mathematics and Evaluation of Primary Education Curriculum Renewal also brought this to light. The former was 25 years old and the latter did not go

into likely correlates of these differences. Comparisons of achievements over States was a major objective of this study.

Secondly, if the achievements of the pupils were not up to the level of expectations what could be some of the reasons for non-achievement? Universalisation without achieving minimum levels of learning does not make much sense. What should the administrator do regarding the improvement of the quality of education? Revision of curricula, textbooks and some in-service programmes of teacher training have been planned and expanded more on a rational basis than on the basis of information from the field. An attempt was to be made in this survey to identify variables that influence pupil achievement.

The present investigation was addressed to the following.

1. To what extent do the students acquire the competencies expected of them in the mother tongue and arithmetic at the end of Class IV?
2. Were opportunities to learn all that was expected to be learnt available at home/school?
3. Do the achievements differ in different skills/competencies?
4. Were the achievements different in different States?
5. Within a State, were there differences in the achievements of different groups?

6. What were some of the correlates of achievements in primary classes?

Differences between States were to be studied on the following lines:

- (i) To what extent were the expectation of achievements different from State to State?
- (ii) What were the differences in provision of learning opportunities?
- (iii) What were the factors responsible for the differences over States, if any?

Coverage

All children finishing the fourth year of formal school were the universe of the study. Since the study was being undertaken with the dual purpose of assessing achievement of desired competencies by the children as well as studying the factors which facilitated or obstructed this achievement, schools as institutions as well as State systems of education were also considered as the sub-populations.

It was expected that the study would be conducted in all the States in the country. Because of resource constraint, Union Territories were not included, however, an exception was made in the case of Delhi. All types of recognised schools having primary sections were considered as the population of schools.

Only achievement in arithmetic and the mother tongue⁷ were to be investigated.

⁷ The language of the medium of instruction was interpreted as the mother tongue

Sampling Design

Multistage stratified random sampling design was adopted for selection of primary schools in each of the 22 States and the Union Territory of Delhi.

Pupils who were studying in Class IV in recognised schools were the population under consideration. About one lakh students enrolled in Class IV were to be approached for testing. According to the Fifth All India Educational Survey, 1,40,40,119 pupils were enrolled in Class IV in 25¹ States and the Union Territory of Delhi in the year 1986. Thus the sample to be covered was expected to be about 0.7% of the total enrolment (See Appendix Tables A1, A2).

A logical approach was to allocate the planned sample of one lakh children in proportion to the enrolment of pupils in Class IV of the State in relation to the total enrolment in 25 States and Delhi. It resulted in the samples varying in number from 83 in Arunachal Pradesh to 13,688 in Uttar Pradesh. Four States had a quota of less than 200 pupils, which was considered too small to allow meaningful comparisons (planned to be studied) over some stratifications such as gender, location, caste and region. On the other hand, States like Uttar Pradesh ended with large number of pupils which could be reduced without losing out on representativeness or the minimum desired 'n' on any stratification.

It was decided to approach at least one thousand students in a State. The planned distribution of sample sizes over the States can be seen in Table 1.

The sample within a State was distributed over urban or rural groups according to the proportion of pupils enrolled in the respective areas. The average number of pupils in Class IV in a school was estimated by dividing the total number of children (enrolled) by the number of schools in the respective area. In a school not more than 25 pupils were to be administered the tests. This aspect was not of much importance in the rural schools where enrolments generally tended to be lower than 25, but it was important in urban areas where average enrolment

per school frequently exceeded 25. The number of schools in urban or rural area of a State was determined by dividing the sample by their corresponding average enrolment per school or 25, whichever was less.

The school was the unit of sampling. The number of primary schools in most of the States was very large. A great deal of time and effort would be required to collect data from schools spread thinly over a large geographical area, i.e., if a simple random sample of schools was selected. A three-stage stratified random sampling was adopted to select the schools in the various districts of a State.

Each State is divided into several regions according to economic and geographical conditions and for administrative convenience. One district was selected randomly from each of the regions² if it had nine or less than nine and two districts for more than nine districts.

The capital cities have unique characteristic of housing large number of government servants, pointing to a concentration of educated manpower in the city. Also, the schools have an easy access to administration. This was considered a special circumstance and the capital cities of all the States were treated as a region of the State.

The district, including the capital city (i.e., if it got selected from the region), was allocated pupils proportionate to the total enrolment in the district; allocation for the capital city was determined as for any type I city in other regions. Schools of the urban and the rural area of a State, determined in Step One, were allocated proportionately among the selected districts/capital city.

Cities in the selected districts were classified into three categories, namely Type I, Type II and Type III-V³ as classified in the 1981 census report. One city of Type I, one of Type II and two to three from Type III were selected randomly. In case no city of Type I or II existed in the district, more cities of the third category were selected. In addition to the above, three to five Blocks of

1 All the twenty-five States were to take part in the survey; later three States dropped out at various stages.

2 A list of regions was obtained from each State.

3 Henceforth referred to as Type III only.

the district were also selected randomly from the list of Blocks provided by the State Coordinator. The number and names of all schools having primary sections in each selected city and Block were obtained from the State. Number of schools determined for each district in Step Two were proportionately allocated among the selected cities and Blocks.

In most of the States, the primary schools are managed by the State government or local bodies (which were also treated as government management). Few primary schools are attached to middle or secondary schools. Wherever there was a substantial number of primary sections as part of the middle or secondary schools and the enrolment in schools managed by different agencies or the type of school was available, the sample of the school of a city/Block was divided proportionately over these stratifications. Finally the schools were selected randomly from the list of schools of the city/Block provided by the State. Broadly speaking, the sample as designed was self-weighted within a State.

Lists of schools with their State, region, district, city and school codes were prepared and sent to the respective State Coordinators. A supplementary list for rural area was also prepared for each State, it was to be used in case the sample of pupils fell too short of the sample planned.

In rural area, the enrolment of children in a class generally remained short of the maximum permissible number of 25 but sub-sampling of pupils within a school was expected in urban schools. This was left to the field staff who were provided with elaborate instructions with examples. Sub-sampling of teachers in a school was also left to the field staff, guidelines were provided.

Samples Planned and Obtained

As already mentioned a sample of 1,00,000 pupils who had studied up to Class IV in the formal school system was to be selected from 25 States and the metropolis of Delhi. On the basis of earlier experience of difference between enrolment and attendance, only 75% of the planned numbers were expected. In addition, three States, namely Himachal Pradesh, Manipur and Goa, could not participate in the project. A part of Jammu & Kashmir was also dropped. Considering this, the obtained sample of 65,861 pupils of Class IV was considered satisfactory in numbers. But the proportions allocated to the States were not maintained (See Table 1). The maximum loss was in Madhya Pradesh, Meghalaya and Uttar Pradesh. Data of a much larger number of pupils was returned from Madhya Pradesh but nearly 25% of it was omitted

because of one reason or the other.⁴ Meghalaya did a very hurried job, 8-10 months behind the scheduled dates, and only these many pupils could attend the school before they closed for vacation. Uttar Pradesh, too, could not manage more than 48% of the targeted number. Sikkim presented the most interesting situation of getting many more pupils from each school while most States struggled towards the predetermined number of pupils by approaching schools from the additional lists as well. Sikkim obtained, on the average, 50% more sample than the expected number from each school.

Table 2.1

SAMPLES PLANNED AND OBTAINED

State	Schools		Pupils	
	Number Planned	Percentage Obtained	Number Planned	Percentage Obtained
Andhra Pradesh	285	128	5097	82
Arunachal Pradesh	88	101	951	98
Assam	202	106	2591	76
Bihar	310	103	5571	61
Gujarat	249	87	5816	79
Haryana	106	99	2425	71
Jammu	116	95	1000	81
Karnataka	308	90	5898	83
Kerala	168	101	4200	86
Madhya Pradesh	399	72	7014	42
Maharashtra	361	96	7795	99
Meghalaya	186	73	1518	34
Mizoram	68	101	999	93
Nagaland	71	113	1149	80
Orissa	278	111	1190	72
Punjab	107	98	2591	75
Rajasthan	250	94	4628	62
Sikkim	56	91	750	145
Tamil Nadu	305	94	7525	70
Tripura	71	123	1519	69
Uttar Pradesh	415	96	10146	48
West Bengal	354	119	6827	76
Delhi	85	92	2125	73

It can be seen from the table given above that while the proportion of obtained pupil sample varied between 70% to 90% in two-thirds of the States, with the exception of two, i.e., Madhya Pradesh and Meghalaya,

⁴ The bases on which some of the data was eliminated have been discussed in Chapter 4.

all others contacted 90% or more schools, ten of these went beyond 100%

With the purpose of checking the representativeness of the obtained sample, some of the statistics available from the data collected for this study were compared with the corresponding figures as available from the 1986 survey. Observations on the following variables were compared: percentage of (i) primary (only) schools, (ii) girl students, (iii) Scheduled Caste students, (iv) Scheduled Tribe students, (v) women teachers, (vi) trained teachers. The maximum deviation was noticed on primary (only) schools. Andhra Pradesh, Gujarat, Jammu, Karnataka, Maharashtra, Nagaland, Meghalaya and Sikkim included many more middle and secondary schools than was expected. On the other hand, Haryana and Kerala included a larger number of primary schools.

There were two possible sources of this discrepancy. It may be recalled that lists of schools in the selected districts/Blocks were obtained from the States. If at this stage a State sent an incomplete list and omitted a certain category of schools completely or partially, the bias could set in. It is likely to have happened in Kerala and Haryana, the two States where the proportion of primary schools exceeded the expected ratio by 31% and 25%, respectively. Another source of bias could have crept in at the stage of data collection, where a school that was very difficult to approach might have been replaced by another school. It may be mentioned that more middle and secondary schools could be approached more easily. The highest deviation was in Andhra Pradesh.

A genuine source of difference was the upgrading of primary schools to middle schools, and the latter into secondary schools, during the 5-year interval between 1986 and 1991. The deviations due to this factor were not known.

What was the likely impact of this deviation on the State means? In Andhra Pradesh, the average total scores for primary, middle and secondary schools were 110.1, 108.8 and 112.4, respectively. The combined mean for pupils from middle and secondary schools worked out to be 109.5, i.e., slightly smaller than primary (only) schools. In its contribution to the total, it has hardly affected the State average.

Another State which included more middle and secondary schools than were indicated according to the 1986 Survey was Karnataka. The average aggregate score for primary (only), middle and secondary schools was 54.1, 66.3 and 77.6, respectively. The State average, improved by this disproportion but it remained the lowest

in ranking among the States.⁵ Meghalaya included many more middle schools than expected, this resulted in lowering the State average. The average score of pupils from middle schools was 87.1 as compared to 95.3 from the primary schools. The average score in Nagaland also got reduced because of the larger number of middle and secondary schools. The averages for the three categories of schools were 58.7⁶, 54.6 and 52.8.

In Gujarat, Jammu, Maharashtra and Sikkim deviation from the expected percentage varied between 20% to 30% less primary schools than expected. Of these States, Gujarat definitely gained, the averages for three types of schools being 104.0, 114.3, and 116.0. The obtained State average was 112.3. The State had included nearly 70% of middle schools, it also insisted on administering the test battery to a large number of children in Class V instead of Class IV but there was no difference between the mean achievements of pupils of Classes IV and V. If arithmetically 20% of pupils from middle schools were replaced by children of primary schools, the obtained average would have got reduced by 1.1 scores.⁷ Jammu, too, gained, but only slightly as the averages of children studying in the three types of schools were in ascending order, being 86.4, 87.4 and 88.7. The State average was 87.5. It had included 28% fewer primary schools. If corrected for this disproportion, the State mean would have been around 86.8 — a difference of less than 1 score.

Maharashtra had 20% fewer primary schools but by including more middle and secondary schools, it got a reduced aggregate score. The mean scores of three types of schools were 113.5, 85.5 and 103.2, respectively. Forty-four per cent of middle schools had a much lower aggregate than primary or even secondary schools. According to the 1986 survey, the expected proportion of primary schools was 68.7%. If the proportions were maintained roughly, the State mean would improve from 95.0 to 105.6.

In Sikkim, the obtained proportion of primary schools was 47.1, against the expected 71.3. But there was no difference between the means of primary and middle schools, these being 89.2 and 89.3, respectively. Nearly 24% of secondary schools had a lower mean of 86.0, which would have somewhat pulled down the State average. The difference would not have been very large.

Though the likely impact of inclusion of more schools other than primary in the affected States has been discussed, the averages were not corrected. The status of schools could have changed in reality. The criterion used was five years old and, more particularly, the National

⁵ Karnataka needs to look at its primary schools seriously.

⁶ The maximum possible score in Nagaland was only 164.

⁷ The expected percentage of primary (only) schools in Gujarat was a low 45%.

Policy on Education (1986) had been implemented during this period⁸. For this very reason, deviations smaller than 20% have not been discussed here.

Deviations on some other variables may also be mentioned. Delhi had more girls (56%) probably because the investigating team chose to visit more schools being run during the morning shift, i.e., if the name of the school was entered only once in the list supplied by the coordinator. It gave the UT a small advantage. Arunachal and Madhya Pradesh also had more girls; this did not have an effect on their total means. Jammu had many more SC pupils. As the survey statistics was for the State of Jammu & Kashmir and the sample was drawn only from Jammu district, the two were not strictly comparable. The proportion of SC population in Jammu may actually be larger. The composition of the State population might have changed very rapidly due to disturbances in the State as well as in the neighbouring areas. There was no apparent reason for the sample to be biased on this variable. In Nagaland, there were more SC and fewer ST pupils, which could be due to change in the status of some tribal groups. There were small increments of SC/ST groups in a few other States also; these were seen as likely deviations due to persistent efforts by the State

governments to get more and more children of socially deprived groups in schools.

In brief, as per information available on some of the variables, there could be small doubts about samples being as precisely representative as were planned. Kerala and Haryana included many more primary schools than was expected on the basis of the 1986 statistics. In Haryana, more schools could have come into existence, Kerala probably supplied a list of more primary schools. There was not much scope to check how this deviation could have affected their averages. Andhra Pradesh, Gujarat, Jammu, Karnataka, Maharashtra, Nagaland, Meghalaya and Sikkim included many more middle and secondary schools, but except for Maharashtra, where the State average seems to have been affected negatively to a larger extent, the deviations had little effect on State averages. The differences in aggregate remained about one point or so. There was no difference in Andhra Pradesh and Sikkim. Karnataka, Gujarat and Jammu got some advantage while the mean scores could be slightly lower for this reason in Meghalaya and Nagaland. Except for Maharashtra, one could consider the samples from the States to be fairly representative as far as the achievement of the pupils of Class IV was concerned.

⁸ No single pattern emerged in the country as a whole. In Rajasthan, Nagaland and Meghalaya, children from primary schools did better than those from middle schools which, in turn, had higher means than those of secondary schools. In Karnataka, Jammu and Gujarat, the picture was clearly reversed while in three other States, namely, Andhra Pradesh, Arunachal Pradesh, and Maharashtra there was no clear pattern, i.e., the primary schools may have scored lower than the middle schools, which might have a higher mean than the secondary schools.

Non-existence of country-wide patterns were noticed in several parts of the analyses. Each State seemed to have an identity of its own; the same may (probably accidentally) resemble some others.

Development of Tools

Comparing achievements of pupils over the States being one of the major objectives of the study, common tools of measurement were called for. School education has been a State subject for long and although it is on concurrent list now, curricula and learning material are prepared by the States themselves. However this study was limited to basic skills and that too at the beginning level of schooling, a great deal of commonality in choice of topics and levels of learning was expected in both the subject areas being investigated.

Test in Arithmetic

Syllabi from several States were studied to identify common topics in the curriculum for Classes I to IV. There was a fair amount of similarity in what the children were expected to learn during the first four years of schooling. This could be due to two reasons. First, the basis as well as the sequence of most elementary things in arithmetic is not very debatable. Secondly, over the years, the curricular framework developed by NCERT has been adopted by several States with minor or no modifications.

From the syllabi studied, the following topics were identified as being common to many States. (i) Time (ii) Multiples and Factors, (iii) Common Factors and Multiples, (iv) Large Numbers, (v) Addition and Subtraction of Numbers, (vi) Multiplication and Division, (vii) Unitary Method, (viii) Measures of Length, Mass and Capacity, (ix) Fractional Numbers, (x) Addition and Subtraction of Fractional Numbers, (xi) Decimals, (xii) Area and Volume, (xiii) Profit and Loss, (xiv) Indian Currency. On the basis of a detailed study of syllabi from eleven States¹ and the syllabus prepared by NCERT, it was decided to exclude profit and loss, area, volume and specific sums on Indian currency. The last one found some place in units of currency commonly known to the children.

The detailed statement prepared by the NCERT in its document "Minimum Learning Outcomes and Content for Teaching Mathematics" was consulted for developing items on various topics. Textbooks from other States, wherever

possible, were also consulted.

The first draft of the items was prepared in a workshop in which practising teachers, curriculum designers, supervisors, teacher educators and evaluators participated. Then, all the items were discussed to judge their suitability for pupils of Class IV and the appropriateness of the alternatives in the multiple-choice questions by the group. These were further studied by the Project team to eliminate unnecessary duplication. Only one test in arithmetic was planned for the final testing. As the children were likely to need sufficient time to respond to the items it was considered important that the final test should not be very long and the items must be functional in most States. Trying out a large number of items at this stage would help to select the most appropriate set. To avoid a burden on the children and the State-Centres, the initial pool of 122 items was divided into four forms.

The items were arranged topic-wise and were marked as 'easy', 'average' and 'difficult' within each small group. The four forms were made reasonably comparable by assigning items with the help of these three categories. Each form was to be tried out in four to five States. The participating States (22 States and the Union Territory of Delhi) were also divided into four groups. Each group included States where Hindi was the medium of instruction and three or four other languages in which the test would be translated.

The States were advised to administer these tests to approximately 200 pupils from at least 10 schools which could be considered as representative of the population of schools. Item analysis was carried out by the States as per guidelines provided from the NCERT, and data regarding pass percentage, discrimination value as well as the frequency of response of the upper and lower 27% on each alternative was returned to Delhi. The analyses were scrutinised for accuracy before the same were used for selection of items. Item-analysis data for a set of items was received from two to five States.

Items were selected on the basis of this feedback

¹ The syllabi of Delhi, Bihar, Kerala, Tamil Nadu, Andhra Pradesh, Karnataka, Uttar Pradesh, Haryana, Nagaland, Meghalaya, and Kashmir were studied.

The division of items over topics and objectives was maintained.

The final test comprises 40 items as per details given below

	<i>No. of Items</i>
1 The four fundamental operations including addition, subtraction, multiplication and division	12
2 Factors and multiples	7
3 Decimals, including addition and subtraction	7
4 Fractional numbers, addition and subtraction of fractional numbers	5
5 Weights and measures	3
6 Time	3
7 Unitary method	2
8 Line segments	1
Total	40

On the basis of competencies, the group of 40 items could be categorised as

	<i>No. of Items</i>
1 Knowledge	19
2 Understanding	12
3 Application of knowledge	9

Tests in Language

Testing achievement in language was a task more difficult than evaluating achievement in arithmetic. The latter had the advantage of limited and well-defined syllabus and a near universality of content and language over the States. For language, one could mainly hold on to the broad learning objectives and vary the choice of context over the entire country to make it equally attractive or difficult for the children in different regions.

Although, four broad objectives of learning the first language at the primary level are mentioned everywhere, i.e., learning to listen, speak, read and write, the schools work mainly for teaching of reading and writing. Competencies related to speech and listening are learnt more in the world outside than in the school. It was, therefore, decided to restrict the tests to measurement of achievement in reading and writing only. As the tests had to be of the paper-pencil and multiple-choice type, testing was further restricted to competencies that could be measured through such tests.

Language experts, educationists and teachers met together in a week-long meeting to identify skills and competencies that children were expected to acquire for

reading and writing in their mother tongue at the end of Class IV. Curricula and competencies laid down by several States and by the NCERT were kept in mind all the time. After some deliberation, it was agreed upon that the following may be included for testing achievement in reading and writing.

By the end of four years of formal schooling, a child should be able to read a variety of material such as stories, narration, simple scientific material, biography and message-related communication in the mother tongue. Reading competencies were further specified in pupil behaviour as elaborated below. The student should be able to

- note details, i.e., the information given in a write-up (of reasonable length)
- understand the meaning of a difficult word or phrase from the context
- relate things or events
- see a cause-and-effect relationship
- draw conclusions
- understand the intention of the writer
- get the central idea of a write-up.

In writing, several skills and competencies were considered but keeping in mind the restrictions of objective-testing, only the following were selected. The student should have the ability to

- choose the most appropriate word in writing
- write correct spellings
- formulate a sentence correctly
- use correct punctuation

The competencies as stated above sounded rather high-level but the working group further clarified that the same can be interpreted at the levels suitable for children of primary schools. To further guide the development of tools, this group selected some material as examples of suitability of content, complexity of ideas and difficulty of language. Several item formats were discussed and a few were selected for development of tools for this study. The following item-types were retained for testing reading comprehension:

- A brief write-up was followed by multiple-choice questions, the children could read/refer to the passage as often as they wanted to. The test-type gave the maximum freedom, both with respect to choice of material and to the competencies to be tested
- A significant word was eliminated in a sentence. Out of the given alternatives, the pupil was to select the one which made the sentence most meaningful.

For testing skills in writing:

- A word was left out in a sentence. The pupil was to select one out of the given four words

which would fit in best from the point of view of (a) style, (b) grammar

- Given four constructions of a sentence, the pupil was required to identify the most accurate one
- The correct spelling of a word spelt in four different ways was to be recognised
- Appropriate punctuation signs for a given write-up were to be selected

In addition, a test of word knowledge was also prepared. Although a better vocabulary is helpful both in reading and writing, the test was meant more as a measure of verbal ability than of reading comprehension. In this test, a pair of words were given and the pupil had to identify whether the given pair of words were antonyms or synonyms. This format was preferred over choosing a synonym or antonyms out of four given words. This test was the hardest to translate in many languages as one searched for similarity in nuances and comparability in difficulty.

A small sample of suitable write-ups and questions were sent to the States requesting them to contribute similar material of suitable difficulty. To avoid bias of familiarity, the States were requested not to send any material which formed part of the textbooks. 'Words' however, could be selected from textbooks. In particular, basic material in the form of passages was requested as the same could be used for writing of various type of items. The write-ups were received in Hindi and in case of other Indian languages translated in English. Several States participated in this exercise. The material was scrutinised and a rough selection was made with the help of colleagues working in the NCERT. Some of it was discarded for repetition², or poor quality of questions developed on the material. However, if the basic material was good, fresh questions were framed.

Following tests were prepared for pretesting

	No of Items
1 Reading Comprehension (paragraph) (based on 24 write-ups)	175
2 Reading Comprehension (sentence)	22
3 Word Knowledge	168
4 Appropriate Word	64
5 Sentence Structure	68
6 Spelling	42
7 Punctuation (three write-ups requiring 25 signs)	3

The first five tests for language were translated into English. Both the versions, Hindi and English, were sent to the States which needed to translate the tests. The States that had to test in Hindi or in English were sent only one version. The tests on sentence structure, spellings and punctuation were tried out in Hindi only. The States were advised to prepare comparable tests and try them out in their own languages.

Some of the tests were too long and time-consuming. These were divided into 3-4 forms and only one form was sent to a State for try-out. The tests in Reading Comprehension (paragraphs) and Sentence Structures were divided into³ four forms and the one on Appropriate Word into three forms. Each form was tried out in at least one Hindi speaking State and one of the States in the southern and eastern parts of the country. The test of Word Knowledge was also long but its format being such as would not require too much time for responding, it was sent to the States as it was. As greater difficulty was expected in translation and in obtaining comparable statistics on these items, a larger number of items with data from several language-versions was preferred at this stage. Item-analysis data obtained from responses of approximately 200 pupils was returned to Delhi⁴. Subject specialists met again to study the data thus available and select the final tests. For nearly all the tests, many more items were found suitable than could be retained. The same were looked into again for preparing a balanced test battery which could be responded to by students in a reasonable amount of time without getting very tired.

The data on test of Word Knowledge was limited, but the larger number of items included initially helped the team to prepare an acceptable test. Under Appropriate Word, two formats were tried out. One of these had running material in the form of a story, in the other, items were based on one or two sentences from a context. It was decided to test on the basis of the running story. But the one tried out had to be dropped as it was found to be part of the prescribed reading material in the textbooks of one of the States. It was replaced by another story. The items were written by the Delhi team and improved upon with the help of data collected from children in Delhi schools. The test in punctuation was finally dropped because of the difficulties faced in scoring.

² There were many write-ups received on lives of great men and women.

³ The tests in Sentence Structure and Spelling could not be translated in other languages. These were tried out in the Hindi-speaking States only.

⁴ Most States participated in the pre-tryout.

The final battery consisted of

	<i>No. of Items</i>
1 Reading Comprehension (paragaph) (six write-ups)	44
2 Reading Comprehension (Sentences)	16
3. Word Knowledge	40
4 Appropriate Word	24
5 Sentence Structure	18
6. Spelling	25

While discussing variations in item statistics over the States, it emerged that the difficulty levels of the items were changing not always because of the difficulty of content or complexity of language but sometimes because the intention of the item-writer did not become clear to the translator. Greater effort to ensure comparability of the translations seemed to be needed. After the final tests had been translated into different languages, a meeting of the translators was specially called to discuss the translations and modify the same wherever necessary. It is felt that this exercise enhanced the comparability of the tests in different languages.¹

The tests have been printed and used in Hindi (7 States)⁵, English (3 States), Punjabi, Bengali (2 States) Oriya, Garo, Khasi, Mizo, Assamese, Gujarati, Marathi,

Telegu, Kannada, Tamil and Malayalam.

The Questionnaires

Three questionnaires, one each for collecting information on pupils' home background, teachers' background and the teaching practices they adopt and school-related variables, were designed. The questionnaires were prepared by the team at Delhi but they were nevertheless sent to the States for comments as well as try-out on small samples. The latter part of the exercise was undertaken to check that the questions were understood clearly by all those who had to respond to the questionnaires. The questions were revised on the basis of the feedback made available by the States.

The questionnaires were also translated into regional languages. A few States preferred to use the English version of the School Questionnaire, which was to be responded to by headmasters, on the plea that they could read and respond in English.

Comparability of the Final Forms of the Tests in Different Languages

In the preceding section, the steps taken to evolve common tests as would be fair to all (or most of) the States

Table 3.1

RANKS ACCORDING TO MEDIAN PASS PERCENTAGE IN THE TESTS

<i>State</i>	<i>Arith</i>	<i>RC(P)</i>	<i>RC(S)</i>	<i>WK</i>	<i>AW</i>	<i>SS</i>	<i>Spell</i>
Andhra Pradesh	2	3	14.5	10	6	8	3
Arunachal Pradesh	15	19	20	20	16	15	13
Assam	11	6	9	3	17	6	7
Bihar	1	1	1	1	1	1	1
Gujarat	5	4	2.5	5	3.5	2	4
Haryana	8	8	8	11	7	11	10
Jammu	10	14	10	18	13	18	22
Karnataka	23	23	23	23	23	21	19
Kerala	17	11	19	19	14	14	11
Madhya Pradesh	21	21	17	16	18	19	20
Maharashtra	16	12.5	14.5	12	12	5	14
Meghalaya	3	12.5	2.5	14	11	-	5
Mizoram	5	2	7	2	2	3	8
Nagaland	18	20	21	22	21.5	-	-
Orissa	13	16	11	7	15	13	16
Punjab	5	7	5	4	5	4	2
Rajasthan	7	9	4	9	9	12	17
Sikkim	19	10	14.5	6	21.5	17	15
Tamil Nadu	14	18	14.5	13	19	9.5	6
Tripura	22	22	22	17	20	20	21
Uttar Pradesh	9	5	6	8	8	7	9
West Bengal	12	17	18	21	3.5	9.5	18
Delhi	20	15	12	15	10	16	12

⁵ Comparisons between the Hindi-speaking States will be free from any differences in the tests arising because of translations.

were explained. As one of the objectives of the study was to compare achievement of the children in the various States in the country, no attempt was made to select items which would give a very narrow range of means over the States. Item-analysis data were used to (i) eliminate items with very large fluctuations in the pass percentages, particularly if suspected because of poor translation or non-inclusion of topic in the prescribed curriculum of several States, (ii) improve upon non-discriminating alternatives. The main criterion for selection of an item was the extent to which it represented the competencies expected to be learnt in the curriculum. In this connection the statements elaborated in the NCERT documents were consulted frequently.

The data regarding pass-percentages obtained from the sample of pupils tested in the survey are given in the Appendix. The range of difficulty values was large for tests in Arithmetic and Reading Comprehension and particularly narrow for Word Knowledge and Sentence Structure. The former had only two alternatives, i.e., the pair of words was either synonyms or antonyms. This could restrict the range of scores. The test for Sentence Structure was common for the Hindi-medium States only. A comparable test was constructed in other languages by the State Centres. Some States reported having adapted the Hindi version as the grammar of the languages in which they were testing was very similar to Hindi (e.g., Gujarati, Punjabi). One of the reasons for the generally high pass percentages of items in this test could be more

obviously the incorrect constructions of sentences included by some States.

As achievement only in the two subjects related to the basic skills of learning was being compared, it could be assumed that the same would be simultaneously high or low in a State. It has already been said that by the fourth year of schooling, large deviations in the curricula were not expected. The differences in achievement of pupils in the States would reflect more the efficiency of the systems than levels of expectations. This assumption would be substantiated if the tests in the battery proved nearly equally difficult or easy in a State. In Table 3.1, the States have been ranked on the median pass percentage on each of the seven tests used.

Although the ranks are not sensitive to the quantum of differences, relative comparability within a State over the tests was noticeable in nearly all cases. The exceptions were few.

Reliability Coefficients of the Tests

Reliability coefficients were worked out by the Kuder Richardson formula 20⁶ which gives only an index of homogeneity of items, the same are given in Table 3.2.

Except for the test in arithmetic in Sikkim, the coefficient varied in the acceptable range. The values were low wherever the tests proved difficult.

For a survey like this, the tests were considered fair and suitable.

Table 3.2

RELIABILITY COEFFICIENTS OF THE TESTS

State	Arith	RC(P)	RC(S)	WK	AW	SS	Spell
Andhra Pradesh	90	.91	.62	98	78	.82	.93
Assam	79	.88	.71	.90	.65	.82	.87
Bihar	90	.92	.85	.89	.81	.86	.88
Gujarat	93	.94	.89	.96	.84	.90	.92
Haryana	89	.92	.86	.93	.80	.89	.91
Jammu	92	.93	.90	.94	.86	.90	.93
Karnataka	87	.92	.86	.94	.83	.89	.91
Kerala	85	.87	.76	.91	.78	.82	.92
Madhya Pradesh	.79	.87	.63	.89	.70	.84	.86
Maharashtra	88	.90	.86	.89	.86	.83	.90
Mizoram	89	.91	.82	.92	.78	.89	.89
Nagaland	92	.89	.75	.82	.83	.90	.90
Odisha	.83	.88	.65	.76	.78	.73	.70
Punjab	74	.76	.61	.89	.63	.	.
Rajasthan	84	.86	.72	.85	.73	.79	.81
Sikkim	89	.93	.87	.93	.86	.86	.93
Tamil Nadu	88	.92	.89	.94	.85	.88	.93
Tripura	30	.91	.88	.72	.64	.74	.85
Uttar Pradesh	89	.89	.78	.87	.75	.85	.88
West Bengal	71	.77	.58	.81	.62	.44	.52
Delhi	93	.95	.94	.95	.89	.90	.93
	.88	.89	.93	.93	.83	.86	.89
	.88	.90	.85	.91	.85	.85	.93

6 Tests on Sentence Structure and Spelling were common only in Bihar, Haryana, Jammu, Madhya Pradesh, Rajasthan, Uttar Pradesh and Delhi.

The Groups in the Study

The Pupils

The data available from 65,861¹ pupils who had studied upto Class IV were analysed in detail. Seventy five per cent of these pupils were from rural area. This compared favourably with 76% expected according to the 1986 survey. The rural group was the lowest, 49%, in Nagaland² and the highest, 92%, in Meghalaya. A high percentage of 90% rural group was obtained in Bihar and a low 54% in Maharashtra. The average age of these children varied from 9.4 in Kerala and Uttar Pradesh to more than 12 years in Sikkim. In general, pupils tended to be older in the north-eastern region. The all-India average was 10.2 years.

The country average of 43% girls compared very well with the 40% enrolment reported in 1986³. The difference was expected as a result of continuous efforts to bring more girls to schools. The lowest percentage was seen in Rajasthan — 27% — followed by Uttar Pradesh and Bihar — both 33%. A near equal number of girls (as compared to boys) were in the samples from Nagaland, Kerala and Mizoram.

What was the estimated percentage of the children who were first-generation learners? Separate questions were asked regarding the educational level of fathers and mothers. As the percentage of illiterate mothers was higher in all States except Sikkim, 'illiterate father' was considered for estimating first-generation learners. The statistics varied from 4.5% in Kerala to 50% in Arunachal Pradesh.⁴ One State each on the two extremes have been excluded from this statement. The Meghalaya sample reported 2% fathers as being illiterate while the statistic was 48% for the total State population according to the 1991 census. It looked a select sample. In Sikkim, the

percentage of illiterate fathers was reported to be a high 73%.⁵ The country median for illiterate fathers was 26%; another 29% had studied only up to the primary level. At the other extreme, less than 6% fathers had gone to college. The percentage, unexpectedly, was the highest for Rajasthan — 12%, it was nil for Sikkim, followed by 1.4% for Meghalaya.

As would be expected more mothers were illiterate with the percentage varying between 32%⁶ in Tripura and 71% in Arunachal Pradesh, followed by 67% and near 67% in Bihar and Madhya Pradesh. On the average, 49% mothers were illiterate and another 30% had studied only up to the primary level. Thus, apart from providing motivation, 80% of the mothers were not in a position to help their children in their studies. The percentage of mothers who studied beyond the senior secondary varied from a low of 3% in Tamil Nadu to 5% in Gujarat. Delhi was an exception with 10% graduate (including post-graduate) mothers.

Forty-one per cent of children came from families where fathers were farmers. The lowest percentage of farmer fathers were reported in Kerala⁷ and the highest, 82%, in Sikkim. Five per cent fathers were professionals and another 2% held relatively higher-level salaried jobs. The total range varied between less than 1% for both the categories to 11% and 16% at the upper end for the two groups, respectively; both the statistics at the upper end were from Nagaland. The percentage of unskilled fathers was rather high in Kerala⁸ (34%) and Punjab (33%), it was nil in Sikkim and only 0.3% in West Bengal. For specifying father's occupation, a category 'Others' was also mentioned which included unemployed persons as well. The highest percentages against this were reported in Tamil Nadu (17%), Kerala (16%), Mizoram (14%),

1 This includes 3681 pupils of Class V from Gujarat.

2 It deviated from the expected percentage of 80 to a large extent.

3 The Fifth All India Educational Survey. The gain in enrolment was likely to be higher. Here attendance was being compared with enrolment.

4 Delhi is excluded.

5 This statistic may not be suspect as the corresponding figure for the mothers was 38%. The average worked out to be 56% which corresponded with 1991 Census.

6 The low statistic of 5% in Kerala had been ignored to avoid an unrealistic picture. The statistic from Meghalaya was also not considered.

7 Delhi excluded.

8 The State Coordinator said that the two districts included in the sample happened to be the most backward in the State.

Tripura (12%), and Delhi (11%)

Of the nearly 66,000 children 18% were SC, 13% ST⁹, 27% BC and 42% 'Others'. But the caste composition of the group, as in the case of other variables, varied from State to State. The SC group was very small in Arunachal Pradesh (2%) and Sikkim (3%) but very high in Punjab — 39% — followed by Jammu and West Bengal — both 33%. The median was 15%. Similarly, the STs were a negligible 1% in Punjab to near 92% in Meghalaya and Mizoram, followed by Nagaland (82%) and Arunachal Pradesh (74%). All these States were from the north-eastern region where most of the population was from the tribal groups. Other States where higher percentages of STs were expected were Madhya Pradesh (only 18% of the sample was from this group), followed by Orissa (19%), Tripura (30%), Gujarat (25%), Bihar (12%) and Andhra Pradesh (7%). Compared to these two groups (combined), the average number of BCs was smaller but the variation over the States was quite large. The lowest, near nil percentage was reported from Sikkim, and the highest — 71% — from Tamil Nadu, followed by Kerala (64%), Andhra Pradesh and Bihar (47%), MP (44%), U.P. (37%) and Karnataka (28%). All the four States from the southern part of the country had a higher percentage of children coming from the group identified as 'Backward Classes', the other three States were from the Hindi belt. 'Others' were the largest single group, less than 4% in Tamil Nadu and a high 80% in Sikkim. Above 55% 'Others' were in Rajasthan (70%), Assam (67%), West Bengal (62%), Haryana (59%) and Maharashtra (55%).

Only 14% of the children came from small families with 1 or 2 children. The percentages were above 25% in Karnataka, Gujarat and Andhra Pradesh, followed very closely by West Bengal and Tamil Nadu. The rest of the children were divided, more or less equally over families with 3-4 or more than 4 children. Large families were reported by more than 50% children from Sikkim and Nagaland.

Children were asked to report whether the language in which they learnt at school was the same as the one they spoke at home. On the average, 78% were learning through their mother tongue. The situation was the most favourable in Kerala and Punjab where 98% or more children were studying in Malayalam and Punjabi, respectively. Above 90% statistics was also reported from West Bengal, Tamil Nadu, Mizoram and Delhi, Andhra Pradesh, Meghalaya and Uttar Pradesh followed close on their heels¹⁰. The figures were very low in Arunachal Pradesh (5%), and Sikkim (3%). The two States teach

primary school children through the medium of English, probably because of multiplicity of languages and dialects spoken by them. In the third State which, too, has adopted English as the medium of instruction for similar reasons, namely, Nagaland, 32% children said they spoke the same language at home as was their medium of instruction. The mean achievement in Nagaland was lower than in Sikkim or Arunachal Pradesh.

Thirty per cent of all children had attended some pre-school programme. The statistic was somewhat mixed as the children could have attended a regular pre-school programme or come together at some place such as the ones organised under ICDS which looked after nutrition and health related programmes more than other aspects such as cognitive or social development. Few (close to 9%) children in Sikkim, Assam and Bihar had attended any pre-school programme.

Madhya Pradesh was also close on to the lower side. The percentages were around 80% in Mizoram and Haryana, followed by Maharashtra, Nagaland, Meghalaya, Kerala, Tripura, and Delhi having between 45% to 55% children who had attended pre-school. The 30% country average looked quite satisfactory.

Some questions were asked regarding the opportunity available to children to learn school related tasks. A few questions were related clearly to the availability of time and material to learn. Children were asked whether they had textbooks and other study material such as notebooks and something to write with. The three alternatives provided were 'most', 'some' and 'few'. Only 76% children said they had most of the textbooks, and a small 4% said they had only a few of them. The smallest percentage reporting availability of most textbooks was from Bihar¹¹ — 31%, — followed by Andhra Pradesh and Jammu both reporting 49%. The situation was not satisfactory in Madhya Pradesh and Meghalaya either, where nearly 50% were outside this category. Availability of most textbooks and other books were reported by 80% or more pupils in Arunachal Pradesh, Gujarat, Maharashtra, Mizoram, Orissa, Tamil Nadu and West Bengal, closely followed by Kerala. In Delhi, 92% pupils said they had most of the textbooks. The largest percentage reporting availability of few books was from Bihar (23%), and Andhra Pradesh (21%). Above 10% statistics in this category were reported in Jammu, Karnataka, and Uttar Pradesh.

The picture was similar with respect to the availability of material to write on or with, only, the favourable statistics were lower than those for the textbooks. The

9 The corresponding statistics in the Fifth All India Educational Survey were SC - 17%, ST - 8% only.

10 These statistics do not reflect the composition of the State population on the basis of linguistic groups as the States tested only through the medium of the language used in the largest number of primary schools.

11 Bihar and Andhra Pradesh had high average achievement.

average for 'most' was 65% as compared to 76% for the books. The lowest percentage in this case was from Meghalaya (22%), followed by Bihar (36%) and Andhra Pradesh (38%). As in the case of textbooks, Sikkim had the highest percentage reporting very satisfactory availability of study material, followed by Delhi (85%), Maharashtra (81%), Gujarat, Uttar Pradesh, Nagaland, and Kerala between 70% to 80%; Arunachal Pradesh, Mizoram, Rajasthan, Tripura, Assam, Haryana, Karnataka and Punjab, all between 60 to 70%. Inadequate supply was reported by 29% pupils from Andhra Pradesh, and between 10 to 20% from Arunachal Pradesh, Assam, Jammu, Karnataka, Madhya Pradesh, Orissa, Punjab, Rajasthan, Tamil Nadu and West Bengal. On the average, approximately 10% pupils reported inadequate availability of study material other than textbooks.

Only two-thirds of all the children said they could attend school on most of the days. This was reported by more than 75% children from Andhra Pradesh, Arunachal Pradesh, Maharashtra (highest -81%), Punjab, Sikkim and Tamil Nadu. The lowest statistics in this category, i.e., less than 50% children saying they could attend school on most of the days were from Madhya Pradesh and Tripura. Overall, the children who had to miss school frequently were a low 2.4%¹² only.

Schools expect parents to help their wards with their homework. The largest number reporting this help was from Mizoram (77%), followed by Delhi (74%), Nagaland (73%), and Kerala (69%).¹³ Help to the lowest proportion of pupils -29% only- was available in Madhya Pradesh, followed by a little less than 40% in Arunachal Pradesh, Meghalaya and Tamil Nadu. The percentage of literate fathers was very high in Meghalaya and more than 75% in Tamil Nadu. On the average, 50% children reported receiving help from the family in doing their homework.

Did the family feel sufficiently involved with or concerned about children doing their homework so as to earmark some space, maybe a corner of a room, where the child could sit and do his/her homework? Only 26% of the families had some arrangement. The highest proportionate frequency was in Nagaland (61%). In Delhi, 48% of the families provided this facility. Other States where 40 to 45% children said they had a space earmarked where they could sit and work were Arunachal Pradesh, Assam, Bihar, Gujarat, Rajasthan and Uttar Pradesh¹⁴. The responses were not easy to interpret as making space available would also depend on what space the family had.

Families expect children to undertake some chores related to day-to-day living, be it inside the home or outside, connected with the family's livelihood. The exception would be a small percentage of rich families which were perhaps not even part of this sample. If a child participated in these activities for a reasonable amount of time, it should not interfere with his studies but if the demand of the family was high, it might become detrimental to the pupil's progress at school. Approximately 10% of the pupils in this sample had to help families for four or more hours every day. The percentage was exceptionally high in Jammu - 46, this could be an exaggerated figure involving children of families dislocated from the Kashmir valley or from Punjab. The other States above the median were West Bengal (17%),¹⁵ Tripura and Bihar - (both 14%) and Mizoram (13%)¹⁶.

What was the educational environment in the homes of these children like? The following questions were asked: Did the family get (i) a newspaper, and (ii) magazines? Were there some books other than the textbooks at home? These questions were asked only to assess the family's interest in, and appreciation of knowledge. Mizoram was at the top with 57% families receiving a newspaper, followed by 52% in Nagaland, 47% in Delhi and 37% in Gujarat. The other States where more than 25% families received a newspaper were Assam, Kerala, Maharashtra and Rajasthan. The percentage of illiterate fathers in these States varied from 5% to 34%. On the average, 21% families received a newspaper at home.

The picture regarding magazines was similar. High percentages of those receiving the same at home were reported from Nagaland (57%), Mizoram (41%), Kerala (40%), Delhi (39%), Sikkim and Gujarat (33%), Assam and Arunachal Pradesh (29% each) and Rajasthan (26%). There is high overlap with States reporting higher percentage of families receiving newspapers. The average was lower by 2%.

A high 64% of the families had no books at home. The worst picture was from Meghalaya - 93%, (only 2% fathers of this sample were reported to be illiterate), followed by 86% in Tamil Nadu and 82% in Madhya Pradesh. Other States where more than 70% families reported having no books at home were Andhra Pradesh, Haryana, Jammu, Karnataka, Punjab, and Uttar Pradesh. It may be noticed that with the exception of Meghalaya, the eastern States including West Bengal and Orissa did

12 This should be seen as an under statement as many of those who had to miss school frequently probably could not respond to the questionnaire for this very reason.

13 The percentage of illiterate fathers in these States was: Mizoram -17, Delhi -10.5, Nagaland -27, and Kerala -4.5 only.

14 The southern States did not find a mention here.

15 This statistic may also be high due to the large migrant population.

16 It was difficult to say whether this obstructed pupil learning as two each of the four States had high and low averages.

not get a mention in the previous sentence. Tipuia came very close to it though. As in the case of newspapers and magazines, Mizoram had a very small percentage (11% only) of homes that did not have any books. Plenty of books were available in homes in Mizoram, and Nagaland.

Two questions were asked about children spending their time in activities that might directly affect their achievement. One of these was about their reading habits. Fifty-eight per cent children said they never read anything besides their textbooks. This statistic was the highest in Meghalaya — 93%. It may be recalled that 92% of the homes in Meghalaya did not have any books. It was followed by Madhya Pradesh (80%) and Jammu, Sikkim, Uttar Pradesh and West Bengal, all close to 70%. The percentage of non-reading pupils was the lowest in Mizoram (19%), and Kerala (26%), followed by Delhi and Gujarat (33% each). The highest percentage reading many books was from Maharashtra and Delhi — 9% — each with Kerala, Mizoram, Rajasthan, Arunachal Pradesh and Gujarat all reporting approximately 7% children reading plenty of books. The percentage of illiterate parents was not low in these States.

The second question was on watching TV. It could affect pupils in two opposite directions. Watching TV could improve language ability, general knowledge and interest in acquiring knowledge. On the other hand, teachers and parents complain that children who get addicted to watching television tend to neglect their studies. The impact will be commented upon at another appropriate place. Here, only the extent of the time spent on this activity will be looked at. Less than 15% children said they watched television for two or more hours every day. The percentage was unusually high for Delhi — 60%, followed by Maharashtra (34),¹⁷ Punjab (29), Haryana (26), and Jammu (22). Negligible viewing was reported from Meghalaya and Sikkim.

Of the total group of nearly 66,000 children, 75% were from rural area, 43% were girls. The latter percentage seemed to have improved substantially from the 40% enrolled reported in the Fifth All India Educational Survey. SC, ST, OBC and others formed 18%, 13%, 27% and 42% of the total group, respectively. Twenty-six per cent fathers and 49% mothers of these children were illiterate; another 29% fathers and 30% mothers had studied only up to Class V. On the other side, 6% fathers and 2% mothers were graduates.

Seventy-eight per cent children spoke the same language at home as was their medium of instruction. The percentages were particularly low on this variable in Sikkim and Arunachal Pradesh. Of all the children, 30% had attended some kind of pre-school programme.

Seventy-six per cent children reported having most of the textbooks, and 65% an adequate amount of other study material such as notebooks, etc. Two-thirds could attend school on most of the days. Ten per cent had to spend four or more hours daily to help with family chores. Half the children received some help from the family in doing their homework.

More than 60% families had no books at home, newspapers and magazines were received by about 20% of the families. Nearly 60% children said they did not read anything besides their textbooks, only 4% read many books. Fourteen per cent children watched television for one or more hours every day.

The Teachers

From each school one or two teachers teaching primary classes, were selected randomly to respond to a questionnaire seeking information about their background, the teaching practices they adopted and the facilities available to them. The number of teachers varied from 78 (Meghalaya) to 753 (Maharashtra) in the States.

In accordance with the distribution of primary school children¹⁸, approximately 75% of teachers were working in rural areas. Over the States, the percentage varied from 39% in Meghalaya to near 90% in Jammu and Bihar.¹⁹ The percentage of women teachers was the highest in Punjab (64%) and the lowest in Bihar (19%), with the all-India median at 39%. A very high — 77% — teachers in Nagaland were young, being less than 35 years of age, Sikkim followed close on its heels with nearly 76%; Rajasthan had 68% in this category, followed by about 60% in Arunachal Pradesh, Madhya Pradesh and Meghalaya, indicating a faster rate of expansion of primary education in the recent past in these States.²⁰ The smallest percentage — 7.5% — of young teachers were in West Bengal, 15% in Punjab and 19% in Tamil Nadu. On the average, 43% of the teachers in the primary schools were younger than 35 years.

Regarding educational qualifications, Meghalaya had a very high 45% non-matriculate teachers²¹, followed by 37% in Mizoram and 17% in Orissa. The other States with a high percentage of non-matriculate teachers were

17 It included Bombay.

18 Seventy-six per cent of all children studying in Classes I to V were in rural areas according to the Fifth All India Educational Survey.

19 Excluding the Union Territory of Delhi.

20 With the exception of Rajasthan, achievement in the other States were quite low. The sample from Meghalaya was a highly select one.

21 Samples from Meghalaya were not representative of the respective population.

Tripura (12.5%), Assam (12%), and Tamil Nadu (10%). The States that employed a large number of graduates were Arunachal Pradesh (70%), Rajasthan (52%), Nagaland (50%), Madhya Pradesh (45%), Jammu (40%), Uttar Pradesh (39%), and Delhi (70%). For the entire country there were more than 4% non-matriculants and 17% graduates teaching primary classes. The rest had received schooling between Class X and XII.

According to the information provided by headmasters there were no untrained teachers in Kerala and Tamil Nadu, and nearly none in Delhi. The percentages were negligible in Punjab and Haryana. The percentage of untrained teachers was highest in Nagaland (65%), followed by 62% in Arunachal Pradesh; around 40% in Madhya Pradesh and Meghalaya, close to 30% in West Bengal, Sikkim, Assam and Tripura, and 22% in Jammu. The median over the States was 10% untrained teachers. Five of the States named in the sentence above were from the north-eastern region, with West Bengal joining them.

More than half the teachers of primary classes had received some in-service training. Probably the PMOST programme of the Central Government in operation since 1986 had also made some contribution in raising this statistic. In-service education had been extended to the highest 82% of teachers in Mizoram and Haryana, followed by Tamil Nadu (81%), Punjab (80%), Delhi (77%), Kerala (75%), Maharashtra (71%), Bihar and Meghalaya (65% each). The same had been available to the smallest percentage—32%—in Tripura and to 38% in Uttar Pradesh.

Probably because of fast expanding primary education, 25% of this sample had less than five years of teaching experience. This percentage was very high in West Bengal (75%), Uttar Pradesh (60%), Mizoram (51%), Nagaland (48%), Meghalaya (46%), Rajasthan (43%), and Arunachal Pradesh (35%). The smallest proportion of new recruits were in Karnataka (12.6%), and Tamil Nadu (17%). It may be mentioned that the statistic on this variable from West Bengal seemed as if some temporary stoppage of recruitment of teachers had been in operation for a while. The most experienced teachers were in Tamil Nadu with more than 51% having taught for 20 years, followed by Jammu, Haryana, Karnataka, Maharashtra, Kerala and Delhi with around one-third of the teachers having taught for more than 20 years. Mizoram seemed to have started large scale primary education in the last decade as only 5% teachers said they had taught for more than 10 years.

It has been often said that the teacher in the school, particularly the primary school, should preferably be from

the community or the village where he is teaching. This would, it is believed, ensure his greater involvement and easy accessibility. Forty-six per cent of all teachers did reside very close to their schools, requiring less than half an hour to travel to and from their schools, another 26% needed less than one hour for this purpose. With 75% schools being in rural areas one could conclude that in about one-third of them the teachers were not residing in the same village. The highest 17% of teachers in Meghalaya travelled for more than three hours every day. This may be due to the terrain of the State. The percentages were relatively high in Jammu (11%), Nagaland (8%), Sikkim (7%), Arunachal Pradesh (6%) and Tripura (6%) probably for the same reason. It was a high 9% in Tamil Nadu as well.

Two questions were asked about the availability of basic material — textbooks and a language dictionary. Regarding textbooks, three possible alternatives were suggested: (i) having personal copies, (ii) copies from the library, (iii) borrowing them from the pupils. A very high 88% of teachers in Kerala had their own copies of the textbooks. The other States in which 60% or more teachers had their own copies of the textbooks were Nagaland (82%), Karnataka (75%), Maharashtra (63%), Andhra Pradesh (62%) and Tamil Nadu (60%). Only 17% teachers in Mizoram²² had their own copies of the textbooks. The statistic was low in Tripura as well. On the average 42% teachers had their own copies of the textbooks. The highest percentage of teachers who borrowed them from the pupils while teaching was 67% in Tripura followed by West Bengal (59%), Bihar (58%), Punjab (52%), Haryana (44%) and Uttar Pradesh (43%), all in the north. In the country, nearly 30% teachers borrowed books from the pupils, probably in the classroom itself.

In Haryana and Punjab more than 60% teachers did not have any access to a dictionary. This was followed by 55% in Tripura, 53% in Maharashtra, 46% in Uttar Pradesh, 43% in Madhya Pradesh, 41% in Tamil Nadu, 34% in Bihar, 33% in West Bengal and 31% in Andhra Pradesh. The best situation was in Nagaland where 97% teachers claimed they could consult a dictionary — that is, if they wanted to. Low percentages for non-availability were also seen in Arunachal Pradesh, Karnataka, Kerala, Orissa, Sikkim, Meghalaya and Mizoram. All the three States using English as medium of instruction, had a dictionary available to larger number of teachers. It may be noticed that the percentages of teachers who had no access to a dictionary were relatively high in the Hindi region. Over all, about 30% of the primary school teachers could not consult a dictionary easily. If they did

²² But a very high 81% had copies from the library which would be as good as having their own copies.

not know the meaning or spellings of a word, 30% teachers had no means to help themselves, at least not easily.

Headmasters were asked to provide information about the availability of physical facilities such as chairs, tables and something for keeping books and other study material. An index of facilities available to teachers was worked out. Minimum facilities were available in Bihar (index value 3.1). It was also low in Meghalaya. High values were obtained in Madhya Pradesh, Maharashtra, Delhi and Mizoram (all above 8). The country median was 6.7.

A few questions were related to the practices that the teachers adopted in teaching. Teachers were asked whether they adopted any new teaching approaches. The question in itself is wrought with the problem of interpretation of what is a new practice. On the average, 16% said they did. The noticeable percentages were from Tripura (70%)²³, Andhra Pradesh (57%)²⁴, and Karnataka and Assam (about 33%). It may be mentioned that the achievement levels of pupils were among the lowest in Karnataka and Tripura. Were the teachers trying to justify themselves or were they really using some new approaches without fully understanding them? Only Andhra Pradesh supported the statistic by saying that under a special aid programme from the United Kingdom they had reoriented a large number of primary school teachers in child-centred approaches, fifty-six per cent teachers of the teachers from Andhra Pradesh had reported receiving in-service education. Ninety-eight per cent teachers from Delhi and Mizoram²⁵ reported keeping strictly to known traditional practices. Other States where more than 90% teachers said they did not experiment with any new approaches were Bihar, Haryana, Jammu, Maharashtra, Orissa and Rajasthan, Uttar Pradesh was very close at 89%. All the States were from the northern region, and six (including Delhi) out of nine from the north-west. Five of these, including Jammu, were from the Hindi region.

Did the teachers even have the faith that some approaches other than dependence on textbooks only would improve pupil learning or their interest in studies? While a high percentage thought so, about 10% teachers from Meghalaya did not think other approaches would. When asked if they used study material other than textbooks, 10% of all the teachers said they rarely used anything else, 44% used it frequently and the rest only sometimes. The largest percentage that rarely used anything besides textbooks was 31% in Meghalaya and Tripura, followed by 26% in Nagaland, 21% in Madhya Pradesh, and nearly

14% each in Arunachal Pradesh, Assam, Mizoram, Rajasthan and West Bengal.

Teachers are frequently expected to create low-cost teaching aids by using local materials. This idea was promoted for years in the recent past and many programmes held to initiate teachers in such practices. On the average, 27% teachers said they had produced plenty of such material. It corresponded with 44% having reported that they used study material other than textbooks quite frequently. The largest percentage of teachers reporting producing some of their own audio-visual aids were from Tamil Nadu (72%), around 50% from Maharashtra, Meghalaya and Orissa also reported producing plenty of such material, followed by Mizoram (46%) and above 30% from Gujarat, Sikkim, Uttar Pradesh and Delhi. The states where a large number of teachers said they did not produce any teaching aids were led by Tripura (56%), Madhya Pradesh (30%), Haryana (29%), Bihar and West Bengal (28%), followed by Nagaland, Karnataka, Arunachal Pradesh, Jammu and Orissa. It was considered an indication of the teachers' involvement with their occupation.

Evaluation and utilisation of feedback available from it is another major activity expected of the teachers. When asked how frequently they evaluated the progress made by their pupils, 40% of all teachers said they did so on a monthly basis. The highest percentages were from Madhya Pradesh (97%), Karnataka (92%), Andhra Pradesh (79%), Nagaland (65%), Gujarat and Tamil Nadu nearly (61%), Kerala and Arunachal Pradesh (58%) and Maharashtra and Sikkim (approximately 55%). This percentage was the lowest in Bihar being 4%, followed by 18% in Jammu. The traditional pattern of 2-3 evaluations a year was followed by the largest number of teachers (94%) in Bihar. Next came Rajasthan, Jammu, Orissa and Delhi where about two thirds of the teachers assessed their pupils' progress along these lines. Teachers in Assam and Meghalaya seemed most indifferent about this aspect, with 57% and 35%, respectively, reporting examining their students only once a year, in the rest of the States the percentages varied from zero to 13%. In brief, the largest number of teachers evaluated pupils 2-3 times, followed closely by those who conducted monthly tests. A high tendency to examine only once a year was noticed in Assam and Meghalaya.

When asked whether they used their evaluation for (i) promoting pupils, (ii) diagnosing shortcomings in learning, and (iii) diagnosing weakness in teaching, 33%²⁶ teachers marked only one choice. This statistic was the

²³ The State coordinator thought teachers had cheated on this.

²⁴ Achievement in Mizoram was very high.

²⁵ Median Value.

highest in West Bengal (75%),²⁶ followed by Assam, and the lowest in Punjab (less than 2%). Most States varied between 20% to 40%. Its utilisation for two purposes was reported by a high 73% in Meghalaya and a low of 14% in West Bengal. Most percentages varied between 25% to 55%. The maximum utilisation of feedback was reported from Punjab, with 61% teachers saying they used it for all the three purposes mentioned in the question, followed by 37% teachers from Haryana, and the lowest of 1%²⁷ in Meghalaya. In most other States, the percentage of teachers reporting maximum utilisation of evaluation data varied between 15% to 25%. On the average, less than 20% teachers seemed to make full use of the evaluations carried out. The rest of them were nearly equally divided in using evaluation for promotion only or both for promotion and diagnosing deficiency in learning or teaching, most likely the former.

Teachers could look after the students who were not learning at the expected level by paying more attention to them or by asking parents to arrange private tuition. More than 90% teachers said they helped the students themselves. The response was 100% from Madhya Pradesh, a low 68% from Meghalaya and 79% from Sikkim. In Meghalaya, 32% teachers of children of primary classes asked the parents of non-achieving pupils to arrange private tuition. This tendency was also noticeable in Tamil Nadu (19%), Sikkim and Tripura (17% each), Mizoram (15%), Arunachal Pradesh and West Bengal (12% each), followed by Karnataka (11%) and Orissa (10%). It seemed to be more acceptable in the eastern region, including West Bengal and Orissa, and part of the southern region. It was not a very prevalent practice in the northern or central parts of the country.

Pupils' homework was checked regularly by nearly 90%²⁸ of all teachers. Only in Sikkim, none of the teachers said they did it regularly, 96% of them did it sometimes, and 4% rarely. In Meghalaya only 46% teachers checked homework regularly. The highest percentage (96%) was reported by Karnataka, followed by Mizoram (95%). In most States the statistics varied between 85 to 90%. There was greater tendency for more teachers of the north-eastern States not to check homework regularly as can be seen from the following figures: Arunachal Pradesh (14%), Assam (11%), Meghalaya (54%), Nagaland (14%), Orissa (23%), Sikkim (100%), Tripura (15%), West Bengal (22%). Mizoram was the only exception. Other States, where more than 10% teachers said they did not check homework regularly, were Andhra Pradesh (11%), Jammu (11%), Madhya Pradesh (10%), Maharashtra (13%)

and Rajasthan (12%). It can be concluded that a large group of teachers did check pupils' homework regularly.

Another question was asked about the teacher-pupil interaction in the classroom. Did the children ask questions in the class? One of the three responses 'Often', 'Sometimes' and 'Rarely' could be chosen by the teachers. The lowest percentages responding to 'Often' came from Meghalaya (37%) and Arunachal Pradesh (38%). Eighty-two per cent teachers from Tamil Nadu and 80% each from Uttar Pradesh and Bihar also ticked this option. The percentages were low in Sikkim, Nagaland and Arunachal Pradesh where the medium of instruction is English. Young pupils may be finding it difficult to express themselves in English or even comprehend the lesson to an extent as would enable them to ask a question. On the average, 66% teachers said pupils often asked questions in the class. On the other side, the States from where teachers marked 'Rarely' as their response were Meghalaya (23%), Madhya Pradesh (20%), Nagaland (15%), Jammu (11%), Sikkim and Tripura (10% each). The lowest statistic of 1% in this option was noted in Andhra Pradesh and Gujarat. Again, more students did not ask questions in the north-eastern region; Arunachal Pradesh and Assam also had more than 8% teachers marking this option. The reasons may be cultural bias or language difficulty experienced by the children.

To summarise, approximately 75%²⁹ teachers were working in rural areas, 39% of them were women. On the average, 43% teachers in the primary sections were young, being less than 35 years of age, and 11% older than 50 years.

More than 4% teachers in the system were non-matriculates and 17% graduates. The rest of them had studied up to Class X - XII, more teachers were matriculates than had passed the higher secondary examination. According to the information provided by the headmasters, 10% teachers were untrained. The highest percentage of untrained teachers were in Nagaland and Arunachal Pradesh. More than 56% of all teachers had received in-service education. The highest percentage having received the same was in Mizoram, and the lowest in Tripura. Twenty-five per cent of the teachers had been teaching for less than five years, only 21% had taught for more than 20 years. Most teachers, i.e. 72%, spent one hour or less in travelling to and from school. More teachers in the States with difficult terrain, and also in Tamil Nadu, had to spend more time in travelling.

On the average, 42% teachers had their own copies of the textbooks, the percentages were high in Kerala

26 In West Bengal, 72% of the schools followed the 'No Detention Policy' up to Class X, so they probably did not use the assessment for promotion.

27 The private/private aided schools in the sample from Meghalaya were a high 86%.

28 Median Percentage.

29 All the averages in this section are medians and not arithmetical means.

and Nagaland and low in Mizoram and Tripura. Thirty per cent teachers borrowed books from the students, most probably on the spot. Thirty per cent teachers had no access to a dictionary. Only a small 16% adopted any new practices, though a much larger number believed such an approach would enhance the interest and achievement of the pupils. Forty-four per cent teachers reported using study material other than textbooks but 10% said they rarely used anything else. The rest of them used it sometimes. Twenty-seven per cent teachers had also developed plenty of audio-visual material themselves while 16% had not prepared anything. Forty per cent teachers carried out monthly tests, 2.5% examined pupils only once a year, the rest of them followed the usual practice of conducting examinations 2-3 times a year. Only 18% teachers made full use of the evaluation, i.e., for promotion as well for diagnosing deficiency in learning or teaching. Most teachers helped weak students themselves, only about 7% asked parents to arrange private tuition. Nearly 90% teachers checked pupils' homework regularly; the exception was Meghalaya where 23% said they rarely checked homework.

Sixty-six per cent teachers said their students frequently asked questions in class, 4.2% reported it to be a rare phenomenon.

The Headmasters

Information about the school as also some about the headmaster was collected through a questionnaire. The head-teacher was expected to respond to the same. In all, 4,547 school questionnaires were analysed.

As expected, the headmasters when compared with teachers were senior in age. Thirty per cent of them were older than 50 years. The largest group above fifty was in Delhi (61%) and the smallest in Meghalaya (1.4%), followed by Sikkim (2%). More than half the headmasters in Gujarat, Maharashtra, Mizoram, Punjab and West Bengal were older than 50 years. A very large percentage—81% in Meghalaya were less than 35 years of age. Other States with more than 25% headmasters in the young age-group, i.e., less than 35 years, were Arunachal Pradesh, Madhya Pradesh, Nagaland, Rajasthan and Sikkim.

While 75% of the headmasters had taught for at least 15 years, 8% had not taught even for five years! More than 10% of experienced teachers working as headmasters were in Rajasthan (26%), Andhra Pradesh (20%), Arunachal Pradesh (17%), Nagaland (16%), Haryana and Orissa (12%), Sikkim and Meghalaya (10% each). It could be related to rapid expansion of school education.

Nearly 7% of all headmasters were untrained. The percentage was very high—82%—in Meghalaya, followed by Arunachal Pradesh (38%), Madhya Pradesh (34%), Tripura (30%), Assam and West Bengal (above 21% each). There were no untrained headmasters in Haryana and Tamil Nadu, the statistics were negligible in Kerala and Delhi. Headmasters with a B Ed degree were the highest 50% in Nagaland, followed by 46% in Rajasthan and 12% in Jammu. Other States with more than 22% of headmasters having the B Ed degree were Andhra Pradesh, Arunachal Pradesh, Karnataka, Orissa, Sikkim and Delhi. This should be seen in light of the fact that nearly 17% of all schools in the sample had middle/secondary classes in addition to the primary classes. Such schools would require graduation with a B Ed degree as an essential qualification for the headmaster.

Over the country, it was a mixed picture. Some States seemed to have more established procedures for recruiting headmasters with the result that they had more experienced teachers leading the schools. Others seemed to have, probably because of rapid expansion, recruited many more directly.

The Schools

Corresponding to the percentage of pupils from rural areas, 78% of the schools were also located there. In nine States more than 90% schools were managed by the State government. Local bodies administered a large number in Andhra Pradesh, Maharashtra, Rajasthan, Uttar Pradesh and West Bengal³⁰.

The percentage of private and private aided schools was very high (86%) in Meghalaya.³¹ Twenty per cent or more schools under this category were in Kerala, Nagaland, Maharashtra, Karnataka, Tamil Nadu, and Gujarat. Most schools were co-educational, only Delhi had a large number of segregated schools. A somewhat higher percentage of schools for boys or girls only were also noticed in Jammu, Meghalaya, Sikkim, Gujarat and Haryana.

Eighty-six per cent of the schools in the sample from Meghalaya were opened in the last decade. Rajasthan and Nagaland, too, had nearly 30 or more per cent of newly opened schools, followed by Andhra Pradesh, Madhya Pradesh and Uttar Pradesh with nearly 20% schools in this category. The lowest percentages, around 2%, were reported from Kerala and Punjab, may be for different reasons. Kerala with near universalisation having been achieved some time ago might have needed very little expansion. The population in Punjab could be declining for different reasons.

³⁰ Delhi is excluded.

³¹ This could be due to the problem in sampling; it may not reflect the situation in the State.

Eighty-three per cent of all schools in the sample were primary (only), 15% middle and the rest had Classes I to VIII. About 12% of them also had pre-primary sections, the percentage was the highest—83%—in Meghalaya³² and only 1% in Tripura. Other States, where a high percentage of schools had pre-primary classes were the Union Territory of Delhi (60%), Nagaland (57%), Sikkim (51%), Jammu (40%), Rajasthan (34%), and Bihar, Maharashtra and Uttar Pradesh all around 30%.

The average enrolment in primary classes was a low of 85³³ in Arunachal Pradesh and 86 in Jammu and Madhya Pradesh. The highest average number of pupils in Classes I to IV were reported from Maharashtra (382), followed by Delhi (343) and Sikkim (331). The median was around 170.

With respect to physical facilities, only 41% schools had a separate room for the headmaster. The percentage was highest in Delhi (83%), followed by 75% in Nagaland, and the lowest (7%) in Bihar. Other States where more than 50% schools had a room for the headmaster were Jammu, Karnataka, Kerala, Maharashtra, Punjab and Rajasthan. The most deprived were Mizoram, Tripura and West Bengal where only 13% and 19% schools, respectively, had a separate room for the headmaster. A common room for the teachers was a luxury available to 19% schools only. In fact it is likely that the statistics emerged from a near equal percentage of middle and secondary schools which were more likely to have this facility. Nevertheless, the figure was highest in Nagaland (84%)³⁴, followed by Mizoram (65%) which had 97% primary (only) schools in the sample. Sikkim and Arunachal Pradesh were the next in descending order.

Drinking-water was not available in one-third of all schools with Meghalaya and Madhya Pradesh on the top without this basic necessity in almost 81% schools. Following these two were Bihar (70%), Orissa (65%), Assam (62%), Nagaland (54%) and Tripura (51%). The highest percentages of schools having supply of drinking-water were in Delhi, Punjab and Sikkim. Toilets for girls were not available in 95% of the schools in Bihar. Other States where the facility was not available in more than 80% schools were Assam, Mizoram, Orissa, Tripura and West Bengal, followed closely by Andhra Pradesh, Madhya Pradesh, Rajasthan, Tamil Nadu and Uttar Pradesh. The country-wide median with respect to availability of toilets for girls was 33% only.

A couple of questions were asked regarding other facilities available to teachers and pupils as would help children to learn better, such as the basic contents of

having something to sit on, or some place to keep their books, availability of blackboards and chalk, etc. Separate indices for facilities for teachers and pupils were worked out. On this index, conditions were most favourable for teachers in Delhi, Mizoram and Maharashtra. The same were the poorest in Bihar, Meghalaya and Assam. The picture was similar with regard to facilities for the pupils, the highest values of this index were noticed for Delhi, Mizoram, Sikkim, Nagaland and Maharashtra, and the lowest in Bihar, Meghalaya and Assam.

The availability of space as well as a teacher per class group seems to have improved substantially in the last decade. On the average, four rooms seemed available for every five class groups. This included verandahs where children could sit as separate (class) groups as also rooms for the headmaster or teachers. The availability of teachers was very low in Bihar and Assam, with only 0.6 teachers per class, followed by Madhya Pradesh, Uttar Pradesh and Haryana—all in the Hindi region with the exception of Assam.

On the average, the schools worked for 215 days in the year but the statistics varied between 184 in Sikkim (186 in Kerala) to 239 in Bihar (236 in Punjab). The number of books available in the library also varied widely with Karnataka claiming a near average of 1,200 books³⁵, followed closely by Delhi reporting nearly 1,000 books in the school which had mostly primary sections only. Schools in Meghalaya seemed to have no libraries, on the average 70 or less books were available in schools in Kerala and Assam. The national median was around 300. Eighteen per cent schools also reported the existence of Book Banks, with Maharashtra leading with 69% schools, followed by Mizoram (57%), Haryana (51%), Meghalaya (17%) and Tamil Nadu (12%).

The picture was very hazy regarding implementation of the 'No Detention Policy' in the schools. Even when nearly all schools were under the same administration, e.g., 99% and 98% being run by the State governments in Bihar and Mizoram, respectively, the responses varied all over the state from not detaining pupils in Classes I to IV. No responses were very high in Gujarat and Bihar. It is likely that the formally stated policy is left for implementation to the individual headmaster or to the district level administration. Only in Madhya Pradesh and Haryana most schools followed it up to Class II.

Although Operation Blackboard was to be extended to most of the primary schools which lacked this minimum facility, a large percentage of schools in Bihar

³² The sample of schools in Meghalaya is dominated by a very large proportion of private private-aided primary and middle schools.

³³ The statistics of 33 from Meghalaya does not look reliable.

³⁴ Nagaland also had 63% primary sections as part of middle and secondary schools.

³⁵ Eighty-five percent schools in the sample were middle schools.

Karnataka and Tripura (more than 80%) remained untouched. The schools in Bihar did not seem to have basic facilities but OB had not been extended to them. The largest percentage — 84% — of schools that had benefited from the scheme was in Madhya Pradesh and Tamil Nadu.³⁶

Parent Teacher Associations existed in nearly half the schools. Very few schools in Meghalaya, Mizoram, Jammu, and Madhya Pradesh had PTAs. In Kerala, nearly 100% schools had the associations³⁷, followed by Delhi (93%), Tamil Nadu (89%), Punjab (80%), Bihar and Andhra Pradesh with nearly 75% schools each.

³⁶ Benefits in achievement have not been visible.

³⁷ Literate parents are likely to have contributed to this situation.

Collection and Organisation of Data

Collection of Data

The test battery for the pupils was printed in four small booklets. It meant more care and work on the part of the field staff in terms of checking/entering identification data on each booklet but it had the advantage of putting only small tasks, at a time, before the young children. The unwanted distraction of looking through other pages, when asked to work on a test, also got eliminated. To avoid loss of data due to missed entries on the booklets, all the test material and the questionnaire meant for the pupils were put in a single envelope on which the identification data were entered by the field staff. Each child was given this envelope with the instruction that after responding to the tests all the material be returned to it. The envelopes were checked for incomplete identification data, if any, before the booklets were sent to the computer centre for recording.

It was decided not to entrust the task of administration of tests to the teachers in the schools. Most primary school teachers were unfamiliar with the importance of keeping to standard instructions when administering common tests. The fear of use of data regarding pupil achievement to assess their own efficiency does not get allayed by any assurances. They could, therefore, help children in making correct answers¹. Help also gets without anyone doing it explicitly on purpose, prompting is a way of teaching, and it slips into the testing situation to some extent. The States were requested to hire temporary assistance for this task. Fresh graduates from colleges of education were recommended. The class teacher was requested to help the pupils in providing the information requested in the questionnaire.

Middle and secondary school teachers were brought in to collect data in two States; a couple of States sought assistance from those working in SIE/SCERT and the supervisory staff.

The State Coordinators were advised to arrange a brief orientation programme for the field staff as also to

let them work in one or two schools under their direct supervision and come back to discuss the difficulties faced, if any.

Sub-sampling of children (needed in some schools in the urban area) and selection of teachers from the school for responding to the Teacher Questionnaire was left to the field staff. Detailed instructions were provided in this connection.

As headmasters would need some time to fill in information required in the School Questionnaire, the State Centres were advised to send the same to them in advance. The person who administered the tests, collected them. He also checked them on the spot for incomplete information. The State Coordinators were also requested to check the entries in the questionnaires before sending them to the computer centre.

The study is addressed to achievements of children at the end of Class IV. Not entrusting the task of test administration to class teachers meant a longer time-interval for administering the tests as the number of persons to be hired/involved would have to be limited. It was decided to administer tests during the six to eight weeks prior to the final examination in the schools. As in most of the States the academic year ends in April, testing was undertaken in February and March. In a few States, where the academic year coincided with the calendar year, the tests were administered during October-November. In a rare case, when the State had fallen behind schedule, the tests were administered on children freshly promoted to Class V².

Cleaning and Validation

The data collected through the tests and the questionnaires for pupils, teachers and schools was recorded on computer media in a fixed format³. The record length was limited to 127 positions due to technical constraints as different types of computer software were expected to be used for data entry by different States. The re-

1 In spite of all precautions, a few cases of mass copying or dictation of correct answers were noticed. In such cases the data from the entire school was dropped from the analyses.

2 In retrospect, looking at the differences between the achievement of pupils of Classes IV and V, it could not have made much difference to the understanding derived from the data.

3 Each field of information had a fixed location in the record.

sponses available from pupils, teachers and schools were on 3,1 and 2 records respectively. The job of data entry was entrusted to local computer agencies in the respective States. Recorded data was received in the NCERT for centralised processing.

As the information was obtained from various persons / agencies, there was some likelihood of bugs creeping in the data due to wrong coding, incomplete information, shifting of field, multiple records, no response, etc. The steps taken to deal with problems occurring most commonly are explained below.

Most of the items of the questionnaires were pre-coded. In case of non-response they were to be entered either as nine-nine or zero-zero, as the case may be. At the time of recording, some out-of-range codes had crept in due to incorrect punching of data. Such cases were reallocated proportionately into the two categories which had highest frequencies. Thus no-information, out of range information were filled up by responses of mean value, its effect on further analysis would be minimal. The reallocation was necessitated as a small number of 'no response' were widely distributed over respondents and variables.

Pupil data was entered on three records, and that available from the School Questionnaire on two. If for some reason, one of the records was spoiled or missing, the entire data for that pupil or school was eliminated. In case the questionnaire for a school was missing, the data for all the pupils from that school was dropped from multivariable analysis. However, such data were retained in the descriptive statistics.

A few multiple records with the same identifications were also found in the data. Most probably this happened due to wrong coding or wrong entry of data. Such cases were also deleted.

In order to detect the shifting of information from one field to another, dummy codes were provided in the record length. If shifting of data was noticed, data from the record concerned was dropped. In order to

improve the quality of data, specific software for validating the raw data files were designed. These software were applied to detect the above-mentioned shortcomings of the data which were either deleted or reallocated as explained above. After these steps the data was treated as valid in all respects and the scoring of tests and tabulation of information from the three questionnaires was undertaken.

To identify cases of mass copying or dictation of correct answers the mean and standard deviation of the scores of pupils on each of the seven tests were computed for all the schools in the beginning. The data of schools which had a very low standard deviation (nearly equal to zero) were deleted from further study.

Not more than 10% of all data was deleted or reallocated in order to clean it.

Multiple Regression Analysis and Composite Scores

Multiple regression analysis is used to predict criterion variable by regressing independent variables. In order to select the best set of regressions, a method known as 'Step-up' regression analysis is used. The method proceeds by introducing one independent variable at a time. The criterion for accepting or rejecting a variable usually depends on the extent to which it affects the multiple correlation coefficient. In this study, the scores of Reading Comprehension (paragraph and sentences) and Arithmetic, separately, are taken as criterion variables. The values of independent variables are taken from Student or School Questionnaires.

In this study, multiple regression analysis has been also used to compute three composite scores of Home Background, Facilities for Learning and Educational Environment at Home. The three sets of independent variables from the Student Questionnaire were regressed against the total score on Reading Comprehension. The regression weights obtained from the analysis were multiplied by their corresponding values of independent variable score and then added to a constant of the regression line to obtain the composite score.

Analysis of Data

Achievement of Pupils

The 65,861 pupils who had studied up to Class IV could hardly be considered a sample from a population. The doubts were more about the reasonable homogeneity of the population than the representativeness of the sample. As was pointed out in the chapter on Sampling, with few exceptions the State samples could be considered representative of the sub-populations from which these were drawn, but the differences between States appeared to be genuinely large. Excluding the highest aggregate score in one State the data from which it was felt, was not reliable, the next high-achieving State still had an average that was nearly eighty per cent higher than the

lowest. As country-wise statistics are often referred to, particularly in the planning exercise at the Centre, an all-India picture is summarised briefly.

Only five of the seven tests were common to all the States. The content was prepared in Hindi and translated into Assamese, Bengali, English, Garo, Gujarati, Kannada, Khasi, Marathi, Mizo, Malayalam, Oriya, Punjabi, Tamil and Telugu. The tests in Sentence Structure and Spelling were prepared separately in the language concerned by the State centres. Nagaland and Tripura¹ did not use these tests. The graphical representation of the five distributions as obtained for the entire country and two, namely for tests in Sentence Structure and Spelling for the Hindi region only, are given in Figs. 1-7.

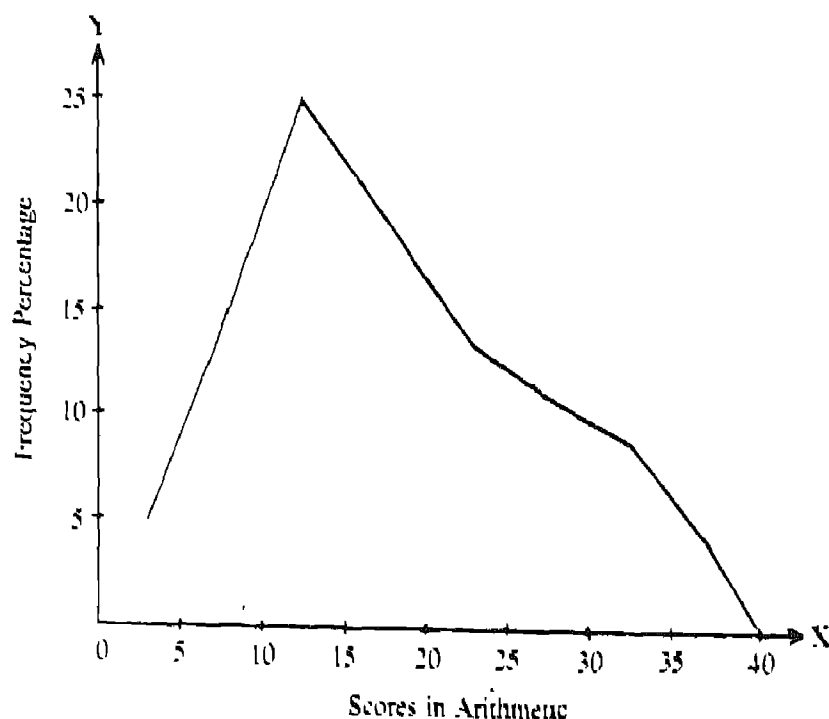


Fig. 1 Distribution of Scores in Arithmetic: All India.

¹ Tripura tested in science instead.

ANALYSIS OF DATA

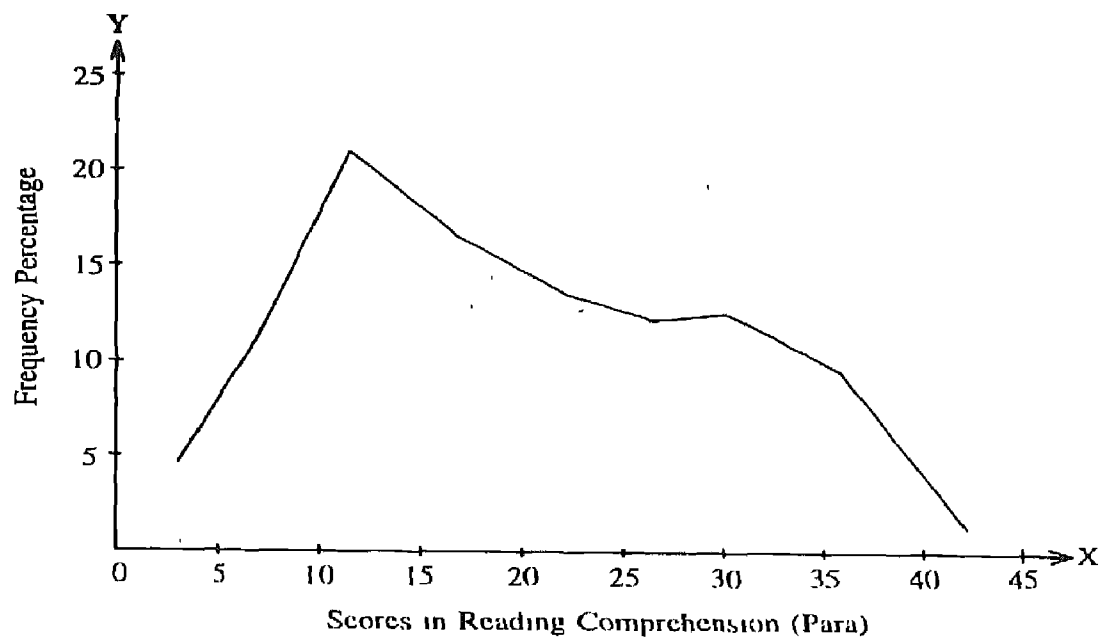


Fig. 2 *Distribution of Scores in Reading Comprehension (Para) [All India]*

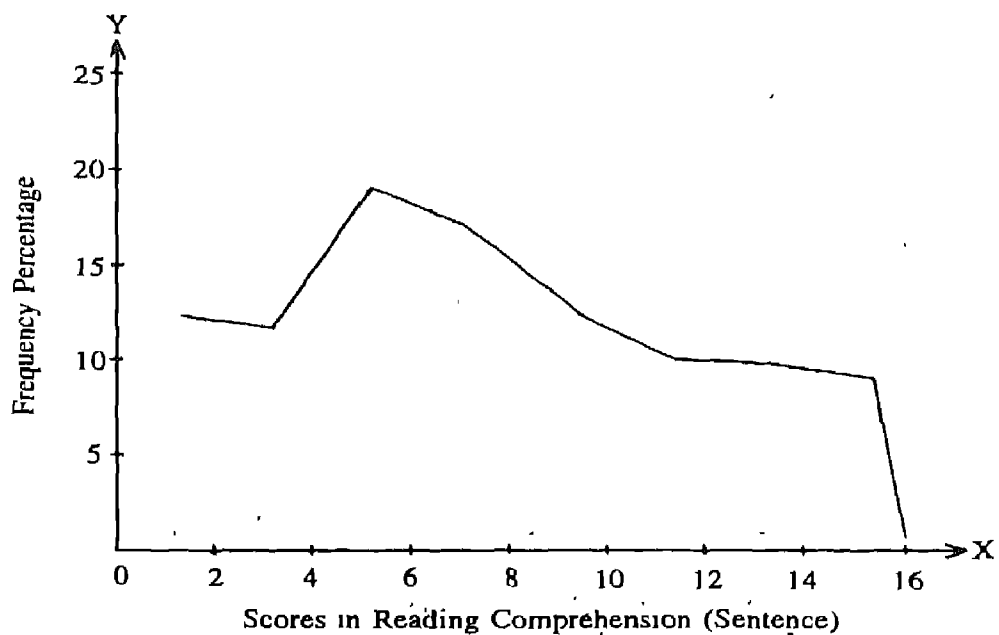


Fig. 3 *Distribution of Scores in Reading Comprehension (Sentence) [All India]*

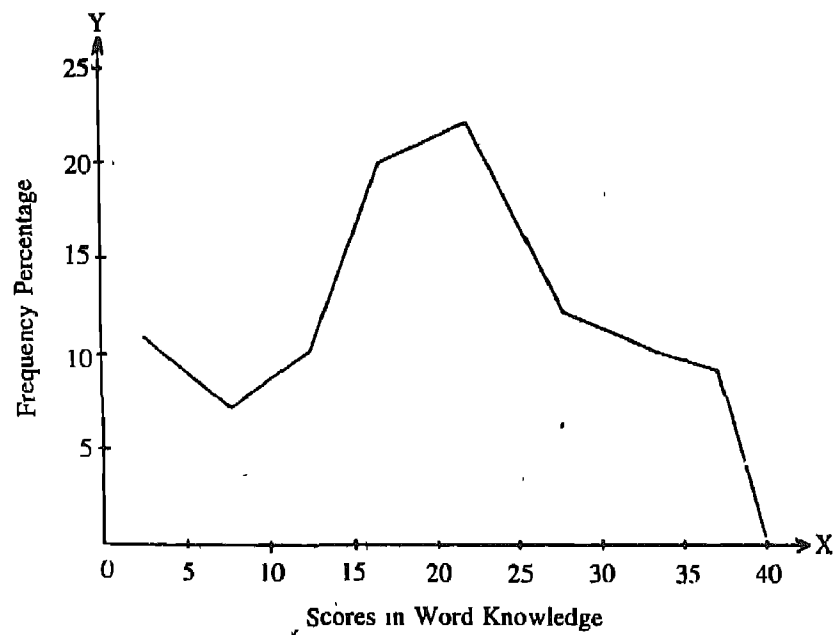


Fig. 4 Distribution of Scores in Word Knowledge [All India]

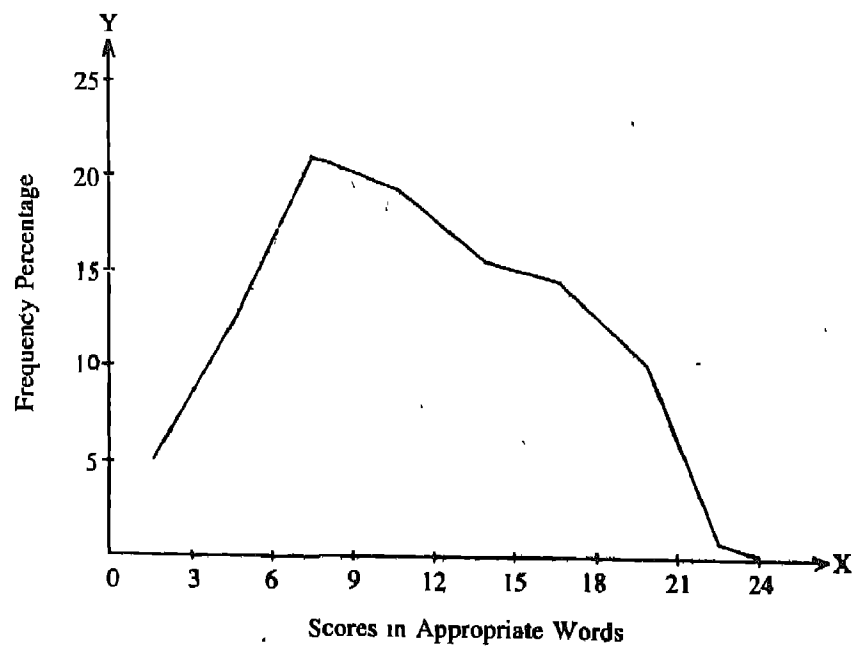


Fig. 5 Distribution of Scores in Appropriate Words [All India]

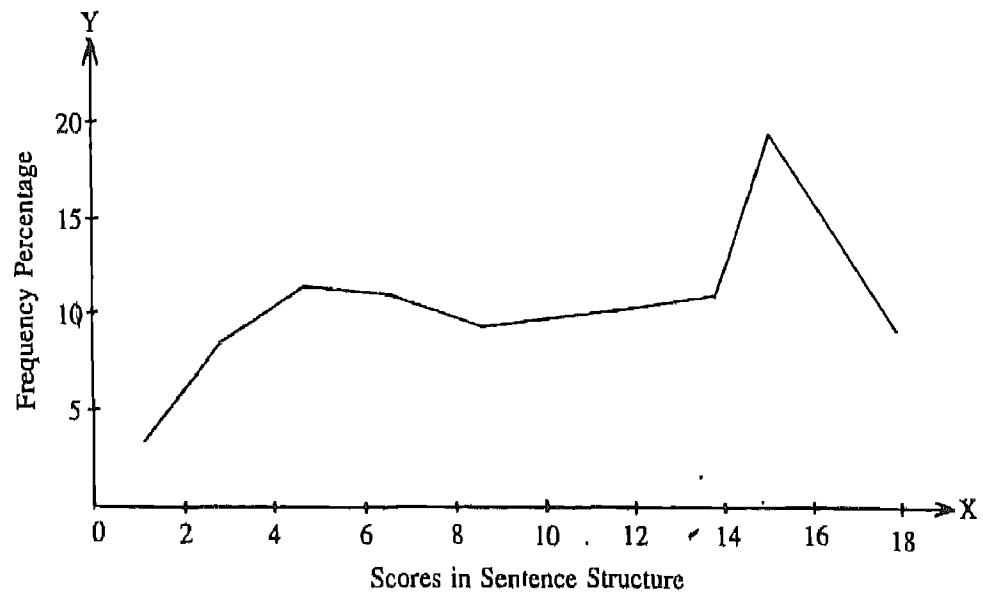


Fig. 6 Frequency Distribution of Scores in Sentence Structure (Hindi Region only)

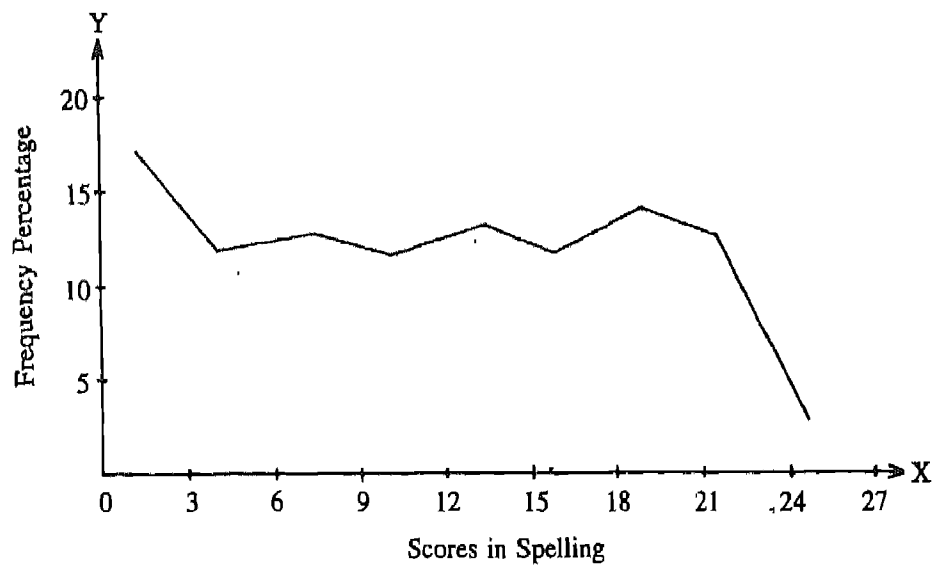


Fig. 7 Frequency Distribution of Scores in Spelling (Hindi Region Only)

Some pupils had zero scores on the tests, this could mean 'no attempt' or very poor knowledge of the subject-matter. The data were cleaned of 'no attempt' on the total test/test battery. This, therefore could be considered as a case of 'no correct answer'.

On the test in Arithmetic, the all-India percentage of zero score was only 0.5. It was nearly 2% in Karnataka, Madhya Pradesh, Maharashtra and Uttar Pradesh. There were no zero scores in Arunachal Pradesh, Kerala, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura.² Assam had a negligible 0.3%. The picture was similar for Reading Comprehension (Paragraph) with a slightly higher country average of 0.7% of zero scores. Only Kerala, Mizoram and Sikkim had no students with zero scores.

Zero scores were a maximum of almost 6% on the test in Reading Comprehension (Sentences) followed by 5% on Word Knowledge. It is suspected that the instructions might not have been understood clearly by the children though questions of these types are often seen in the end-of-the lesson exercises in the textbooks.

With the exception of the test in Word Knowledge, which had only two alternatives offering a higher chance for a guess to get added to the score, the country averages of the other tests varied between 43 to 45%.³ Keeping in mind the very high rate of drop-outs from Class I to IV and assuming that more non-achievers than achievers would tend to drop out, it could not be considered satisfactory. A fair proportion of these children, namely, those in the lowest quartile, could slide back into illiteracy. The mean score on the last two tests in the Hindi region tended to be high probably because of extraordinarily high scores from Bihar.

Differences between Groups

In the following section differences in achievement of pupils when divided over broad categories are discussed. To avoid the jungle of numbers, wherever possible, some of the tables have been presented differently. The details are available either in the State reports or in the Appendices.

Urban versus Rural Groups

When pooled together, there was only a small difference in achievement of children from urban or rural areas, the two means being 96.7 and 96.1 respectively. As in the case of most other variables, the States differed from each other. As the differences spread in both the directions

pooled together the same tended to disappear. When differences were studied State-wise, a different picture started to emerge. In the following table, statistically significant differences have been recorded test-wise⁴.

Table 6.1

ACHIEVEMENT OF PUPILS — LOCATION-WISE

State	$M_u > M_r$	$M_r > M_u$
Andhra Pradesh	T_1, T_5, T_6	
Arunachal Pradesh		T_1
Assam		T_1, T_2, T_3
Bihar		All the tests
Gujarat		T_1, T_2, T_3, T_4, T_5
Haryana	All the tests	
Jammu	All the tests	
Karnataka	T_3, T_6, T_7	T_1
Kerala	T_6, T_7	
Madhya Pradesh		$T_1, T_2, T_3, T_4, T_5, T_6, T_7$
Maharashtra	All the tests	
Meghalaya	T_2, T_5, T_7	
Mizoram		T_1, T_6, T_7
Nagaland		$T_1, T_2, T_3, T_4, T_5, T_6$
Orissa	T_5	
Punjab	T_1, T_4	T_7
Rajasthan	T_5	T_1, T_2, T_3
Sikkim	T_2	T_1
Tamil Nadu	T_7	T_1, T_2, T_3, T_4
Tripura	T_2, T_3, T_5, T_6, T_7	
Uttar Pradesh	T_7	T_1, T_2
West Bengal	T_2, T_3, T_5, T_6, T_7	T_1
Delhi	$T_1, T_2, T_3, T_4, T_5, T_6, T_7$	

Note: In this table the direction of the differences that were statistically significant is recorded and not the absolute values.

It was noticeable that in most States the two groups tended to be different from each other, the differences in a State were in the same direction — for several, and in some cases, all the tests. The States where the urban group definitely did better than the rural group were Andhra Pradesh, Haryana, Jammu, Karnataka, Kerala, Maharashtra, Meghalaya, Tripura, West Bengal and Delhi. The picture was reversed in Assam, Bihar, Gujarat, Madhya Pradesh, Mizoram, Nagaland, Rajasthan and Tamil Nadu. There was no clear trend in Arunachal Pradesh, Orissa, Punjab, Sikkim and Uttar Pradesh. It was difficult to infer the common sociological factors that could have influenced the group of States where either urban or rural children did better. It was highly likely that the reasons were different in each State. For example, in a

² The clustering of the States from the north-eastern region may be noted.

³ These were considered estimates on the high side. Considering the low average number of children in some urban schools, the selectivity exercised by the teachers could not be totally ruled out. The absentees for the day may also be more low achievers rather than a random sample of the total group.

⁴ T1- Arith. T2- Reading Comprehension (Para.) T3- Reading Comprehension (Sent.) T4- Word Knowledge T5- Appropriate Word T6- Sentence Structure T7- Spelling.

State where two languages, namely English and the regional language, were being used as the medium of instruction, the higher socio-economic and educated parents might opt for private (or private aided) schools which teach through English and also charge high fees. The ability of this group of children may or may not be higher than the rest but the aspirations and support from the family are likely to be higher. Such a situation is likely to divide pupils (very roughly though) on a socio-economic background of the family, the option for the English medium can be more or less popular in different States. On the other hand, English-medium schools being mainly an urban phenomenon, a State could be left with a sifted group in urban areas in contrast with an intact group in the rural areas. Some rural areas could be too unapproachable and isolated for the teachers to help themselves. Alternatively, the teachers in rural areas could be more satisfied with their lot, less distracted in the race to get ahead materially and may devote more time to teaching. It would be difficult to say what factors were influencing the direction of differences in a State.

In addition to the differences between urban and rural groups, the achievement of children in the capital city of each State was compared with that of the rest of the children. It is generally believed that children in the capital city enjoy certain facilities which may not be available in other, particularly smaller cities. In general, that turned out to be true. Children from the capital cities of Andhra Pradesh, Haryana,⁵ Kerala, Maharashtra, Meghalaya, Mizoram, Punjab, Tripura, Uttar Pradesh and West Bengal achieved higher than the rest of the group from the respective States.⁶ Small differences in favour of the group from the capital city were also noted in Arunachal Pradesh, Assam, Orissa and Sikkim. Substantial differences in the reverse direction were seen in Gujarat, Karnataka, Madhya Pradesh, Nagaland and Rajasthan, the same were small in Bihar and Tamil Nadu.

Many factors could be affecting these differences. If a capital city has a large number of private high-fee-charging English-medium schools, most children from the high socio-economic-education group may not be attending the common schools managed by the government from which the large proportion of the samples were drawn in most States. In any case, the schools teaching through the medium of English (except where English was the medium of instruction for the entire State) did not form part of the population of schools. This could affect the mean achievement adversely. On the other hand, if the local language was given preference, favourable socio-economic factors may influence ability and achievement in school favourably.

Boys versus Girls

On the total battery, the boys were ahead of girls with an average of 97.6 in comparison to 94.5. Only in Punjab and, to some extent, in Delhi there was a tendency for the girls to achieve higher. But there was more definite evidence for boys to achieve better in tests in Arithmetic and Word Knowledge. Of the 23 comparisons on the test in Arithmetic, 12 were in favour of boys and 4 in favour of girls. In the rest of the States, there was no difference. The girls did better than boys in Arithmetic in Meghalaya, Mizoram, Punjab and Delhi. Similarly, boys had higher scores on Word Knowledge in 15 States, in none of the States, did the girls have a higher score than that of the boys on this test.

Table 6.2

ACHIEVEMENT OF PUPILS — GENDER-WISE

State	$M_b > M_g$	$M_g > M_b$
Andhra Pradesh		I_2, I_3, I_6
Arunachal Pradesh	T_1, T_2	
Assam		T_6, T_7
Bihar	T_1, T_2	
Gujarat	T_1	T_2, T_6, T_7
Haryana	I_1, T_2	T_1
Jammu	—	—
Karnataka	I_1, T_2, T_3	T_1
Kerala	T_1, I_2	I_6, T_7
Madhya Pradesh	T_1, T_2	T_7
Maharashtra	T_1, T_2	T_6, T_7
Meghalaya	T_6	T_1
Mizoram	I_2	T_1
Nagaland	T_1	T_2
Orissa	T_1, T_2	
Punjab		T_1, T_2, T_3, T_6, T_7
Rajasthan	T_1, T_2	
Sikkim	T_1	T_2, T_3
Tamil Nadu	I_1	T_7
Tripura	T_1, T_2	
Uttar Pradesh	T_1, T_2	
West Bengal	$T_1, T_2, T_3, T_4, T_5, T_6$	
Delhi		T_1, T_2

Note — In this table, the direction of the differences that were statistically significant is recorded, and not the absolute values.

In a Arithmetic, the differences may be favourable to the boys because of social expectations. If more women teachers were teaching girls, the achievement could be worse because of the same reason getting reinforced in the second or later generations. The higher scores of

⁵ In Punjab and Haryana, the population-wise largest city replaced the common capital of Chandigarh which is also a Union Territory.

⁶ See Table 11. The ability and attitudes of teachers working in a big city could also be different from those of teachers working in other parts of the State.

boys on Word Knowledge could be due to the availability of opportunity to interact with and learn from several situations outside the home and the school. If the girls were not given the advantage of a similar opportunity, their sources of language learning would get restricted to the environment at home and the teaching in the school. The society at large, teachers in schools and parents at home need to be aware of these not so perceptible discriminations against girls. Lower competence in Arithmetic and limited vocabulary would handicap girls in competing fairly with boys in several situations.

On the other hand, the girls scored higher in the test in spelling in eight States, only in Gujarat did the boys have a better score. Similar but weaker evidence on the test in Sentence Structure was also in favour of girls, who had higher means in six States as compared to only one in favour of boys in Meghalaya. The former is a task specifically learnt at school, the latter would be influenced by listening attentively, reading or even by conforming to accepted norms of speech. Having been more confined to the home, the girls probably concen-

trated more on school-related tasks but not on arithmetic, which, they could have been given to understand, cannot and need not be mastered by girls.

West Bengal turned out to be very conventional, with the urban group and the boys achieving higher than the rural group and the girls, respectively. In Punjab, the situation was totally reversed on gender differences but it was not clear on location.

Differences among Caste Groups

Although on an all India basis, SC/ST⁷ could be considered as one group compared to BC and 'Others', SC tended to have a higher mean of 93.3 as against that of STs -- 92.5. Similarly, Backward Class children had a small advantage over 'Others', the two averages being 97.7 and 97.4, respectively. As in the case of the other two divisions, collapsing data from all States folded up important information.

In Table 6.4, each of the four groups have been assigned ranks by their proportion in the sample from the State as also by the average achievement on the test.

Table 6.3

ACHIEVEMENTS OF PUPILS — CASTE-WISE

State	SC		ST		BC		Others		Sum of Difference between
	Size	Ach.	Size	Ach.	Size	Ach.	Size	Ach.	
Andhra Pradesh	3	3	4	4	1	1	2	2	0
Arunachal Pradesh	4	1	1	2	3	4	2	3	6
Assam	2	4	4	3	3	1	1	2	6
Bihar	3	3	4	4	1	2	2	1	2
Gujarat	3	4	2	1	1	3	1	2	4
Haryana	2	3	4	4	3	1	1	2	4
Jammu	2	4	4	2	3	1	1	3	8
Karnataka	3	4	4	3	2	2	1	1	2
Kerala	3	4	4	3	1	2	2	1	4
Madhya Pradesh	4	2	3	3	1	1	2	4	4
Maharashtra	3	2	4	4	2	3	1	1	2
Meghalaya	2	3	1	1	-	2	-	4	2
Mizoram	2	4	1	1	3	2	-	-	4
Nagaland	2	2	1	1	4	4	3	3	0
Orissa	2	3	3	4	4	2	1	1	4
Punjab	2	3	4	2	3	1	1	4	8
Rajasthan	3	3	2	2	4	4	1	1	0
Sikkim	3	1	2	3	4	4	1	2	4
Tamil Nadu	2	2	4	4	1	1	3	3	0
Tripura	3	2	2	3	4	4	1	1	2
Uttar Pradesh	3	3	4	4	2	1	1	2	2
West Bengal	2	1	4	4	3	3	1	2	2
Delhi	2	4	4	1	3	3	1	2	6

⁷ Among adults, poorer knowledge of the world at large, attributed to women so often, is also a consequence of restricted opportunities of interaction — direct or even indirect through reading, etc.

battery. The last column gives the sum of the differences of these ranks. A low or nil aggregate of the differences points to high correspondence between the two sets of ranks within a State.

There was a strong tendency for the most numerous group to have the highest average score as well. In Andhra Pradesh, Nagaland, Rajasthan and Tamil Nadu,

the correspondence was complete. It was followed closely in Bihar, Karnataka, Maharashtra, Meghalaya, Tripura, Uttar Pradesh and West Bengal. Jammu and Punjab seemed totally free from this tendency. It has been mentioned earlier that both the States had been affected by the large number of migrants to or from the States upsetting the long-standing composition of the population.

Table 6.4

ACHIEVEMENTS OF PUPILS - CLASSES IV AND V

State	Class	N	Scores			
			Total	Arith	RC (P.V.S)	Diff. (total) (V-IV)
Andhra Pradesh	IV	1091	109.8	23.4	30.2	
	V	98	97.5	19.6	28.2	-12.4
Assam	IV	584	82.8	15.4	22.9	
	V	51	81.2	15.1	22.5	-1.6
Bihar*	IV	1974	103.0	18.4	29.8	
	V	119	89.2	16.0	25.6	-13.8
Gujarat	IV	33.3	113.5	27.8	41.3	
	V	302	108.0	25.0	37.9	+15.5
Haryana	IV	1059	111.0	20.8	33.4	
	V	4601	111.1	19.2	32.3	0.1
Karnataka	IV	126	105.5	19.4	30.9	
	V	900	114.9	22.2	33.5	10.9
Jammu	IV	837	87.5	17.9	26.5	
	V	394	84.6	17.5	26.2	-2.9
Kerala	IV	1674	65.8	11.0	17.3	
	V	836	62.9	11.3	17.9	-2.9
Madhya Pradesh	IV	3000	85.5	14.1	26.1	
	V	242	78.3	12.8	21.0	-7.2
Maharashtra	IV	242	77.6	13.0	20.6	
	V	302	73.5	11.6	26.8	-1.1
Meghalaya	IV	1106	94.9	15.1	26.7	
	V	111	77.8	12.8	23.5	-15.7
Mizoram	IV	111	100.9	19.7	29.9	
	V	33	98.6	18.2	26.1	-8.3
Nagaland	IV	926	117.5	20.6	33.6	
	V	12	109.6	19.4	40.1	-8.1
Nassau	IV	338	57.8	11.8	20.2	
	V	338	53.3	13.6	19.4	-4.5
Punjab	IV	1986	94.5	17.0	25.8	
	V	171	97.2	17.5	26.5	3.7
Rajasthan	IV	1919	111.9	21.5	29.8	
	V	619	119.2	23.0	30.8	7.3
Sikkim	IV	2251	102.7	19.3	30.6	
	V	125	104.0	20.2	29.0	1.3
Tamil Nadu	IV	1085	90.4	14.7	28.3	
	V	14	81.1	12.9	26.6	-6.3
Tripura	IV	5277	91.2	16.5	23.6	
	V	132	95.2	17.3	23.8	4.1
Uttar Pradesh	IV	N.A.	—	—	—	—
	V	1833	101.5	18.3	40.5	
West Bengal	IV	874	89.2	15.8	26.1	
	V	5211	88.7	16.4	23.5	-15.3
Delhi	IV	417	82.6	14.7	22.7	
	V	1559	90.5	14.3	26.1	-6.1
	V	223	95.7	16.0	28.0	5.2

* The Bihar data pertains to Classes III and IV.

The other States which seemed to be free from this tendency were Arunachal Pradesh, Assam and Delhi. The major part of the population of Delhi consists of people who have migrated from other parts of the country.

It was likely that the curricular material, particularly the textbooks, tended to have excerpts and examples from the experiences of the majority group. If this were so, it became more relevant and would be absorbed more easily by them. More teachers were also likely to be from the majority group, resulting in greater affinity between the teacher and the pupils of that caste. In this context, it may be mentioned that both Arunachal Pradesh and Sikkim tend to draw some of their educated manpower from other States.

In the light of this, the textbook writers and the teachers need to design curricular experiences that would be relevant to the children of the region or the school. That the teacher should be from the same village has long been said, and that the upper-caste teachers might not be very sympathetic to the lower-caste groups has also been mentioned frequently but there seems to be a stronger relationship between the achievement of pupils and their numerical strength in the community.

It may also be noticed that the differences in achievement of children belonging to BCs and high-caste groups, at least at this level, were negligible. In eight out of 22 States⁸, the BC group had the highest means; the position of 'Others' was nearly the same. In West Bengal, Scheduled Caste children had a higher mean than any other group, they were 32% of the sample. The percentage of SC groups was high in Jammu and Punjab also, but not their achievement, in Jammu it was the lowest of all the four groups.

Differences between Classes IV and V

All the States were requested to administer the test battery to a small sample of approximately 200 pupils from some (at least 10) of the schools selected for the sample. The schools were to be identified, on judgement basis, so as to provide a representative mini sample. Many States included one or two children from Class V in the bigger group of Class IV, making the former a more representative sample.

The objective of this exercise was to assess the average gain in one academic year at this level. The picture that emerged was very disturbing. In 14 out of 23 States, the children of Class V had a lower aggregate score than the children of Class IV; only in eight States

it was higher, in Gujarat, the two means were equal. The highest differences in the range of 15 points in the negative direction were noticed in Assam, Maharashtra and Uttar Pradesh, Andhra Pradesh was not far behind.

Why were the achievements in Class V lower than those of Class IV? The reason of 'recency' of learning-experiences was ruled out as it could not hold for tests of language. A student could forget the specifics of arithmetic, if not used for some time, but this was not applicable to tests in language where the contexts included in the tests were not from the textbooks. While 13 out of 23 differences in arithmetic were unfavourable to Class V, in language the number rose to 15 for RC(P).

One wonders if there is a deterioration in the system itself. The phenomenon did not seem to be related to the qualifications of the teacher. Of the seven States that had a large percentage of graduate teachers, Arunachal Pradesh (70%), Jammu (40%), Madhya Pradesh (45%), Nagaland (50%), Rajasthan (52%), Uttar Pradesh (39%) and Delhi (70%), in five the pupils of Class V had a lower average achievement. Rajasthan showed a total gain of 1.7 scores, and Delhi, 5.2 scores.

Another possibility, that the children of Class IV were assisted in marking correct responses to the items knowing that it was the target group but those in Class V were not, was also considered. But this got stuck as several States had tested children of both classes in a single group. Considering the number of schools from which the sample of Class V pupils were drawn, some of the States that are likely to have tested them together were Kerala, Mizoram, Punjab, Assam, Andhra Pradesh and Meghalaya⁹.

A negative direction in the difference between two means was also noticed in the States with low aggregate averages such as Jammu, Karnataka, Kerala and Madhya Pradesh. All eastern States except Tripura, and the southern States with the exception of Tamil Nadu had lower means for Class V. These were higher in Bihar, Haryana, Orissa, Punjab, Rajasthan, Tamil Nadu and Delhi.

Factors Contributing Towards Differences in Achievements

It was argued in Chapter III that the tests reflected the levels of curricula children were expected to achieve. Their scores¹⁰ spanned the entire possible range, only the maximum score was missed in some tests. Sikkim was the only exception where pupils did not have zero scores on some of the tests. The State-wise distributions

⁸ Delhi is excluded.

⁹ As the purpose of obtaining mean score of Class V children was limited, school-wise means were not obtained for the States the data from which were analysed earlier. It was only after this trend of lower achievement of the pupils of Class V started emerging that this detail was obtained to check the hypothesis discussed in this paragraph.

¹⁰ The scores were not corrected for guessing.

of the scores achieved by pupils can be seen in the Appendix

Data on some of the variables which are frequently thought to be related to pupil-performance in school were collected from pupils, teachers and headmasters with the help of three questionnaires

Pupil-related Variables

Information on 22 variables related to pupils' background was available. Seventeen of these were combined into three composite variables named as 'Home Background', 'Facilities for Learning' and 'Educational Environment at Home'

The composition of the three derived variables is given below

Home Background — location, father's occupation, caste, father's education, mother's education and number of siblings

Facilities for Learning — attended pre-school, place at home for study, help with homework, availability of textbooks, availability of other study material, helping household and attending school regularly

Educational Environment — (family) gets newspaper, (family) gets magazines, books at home, (the child) reads books

The composite scores were obtained by using such appropriate weights for the variables as would maximise the correlation between the composite variable with the criterion variable. Both the criteria were entered separately. In the final analysis for explaining the relationship with achievement, the composite variables obtained against Reading Comprehension were used.

The derived variables were obtained for each State independently. No attempt was made to work out common weights, either by pooling all data or by selecting the best possible weights from some typical State.¹¹

It has been mentioned earlier that both the criterion variables were used separately for studying the relative strength of contribution of the variables. This also provided an opportunity to assess the reliability of weights. If a variable had consistent signs (positive or negative) in both the equations, the reliability of its place in the equation was considered high. Of course, the non-significant regression coefficients could easily change signs, i.e., if these were deviations only from a zero or near zero weight.

On the basis of similarity of signs against the two criteria, as available from 23 States, it could be said that

'Caste' among the Home Background variables, seemed, most definitely to be related to achievement. The direction of the signs of regression coefficients in the equation for the composite variable were consistent in 22 out of 23 States. The exception was Sikkim, where data on the test of arithmetic was suspect. It was followed by Father's Education. The weakest variables, on this count were Place at Home to Study followed by having Attended Pre-school, Help with Homework and Availability of Other Study Material -- all entered under Facilities for Learning.

'Caste' seems never to be forgotten in this country. The 'signs', though similar within a State, were not similar over the States— probably because of the predominance and degree of influence held by different caste groups in different States.¹² Father's Education with the common implication of the maintenance of educational status of the family in the next generation, tended to have persistently similar signs over the States.

The variables which proved somewhat unreliable, in that the signs of regression coefficients in nearly one-third of the States were dissimilar with respect to the two criteria, suffered from definiteness of the meaning of Attended Pre-school for example, It could be a full-fledged educational programme or it could be attending an Aangan Bari run under the auspices of ICDS, which mainly looked after the health and nutrition of the children. In a situation like this parents' interest could also get limited to the 'food' part. The quality of help with homework could be suspect as it could be rendered by a parent or an older sibling, himself/herself equipped poorly for this job— meaning little assistance in real terms to the learner under scrutiny. Availability of Study Material, too, was perhaps vague in itself as it was related to the perception of the individual of what is adequate. A piece of slate on which writing may not be very clear or a tattered copy of the textbook may seem adequate to a child from an economically deprived background.

'Attending School Regularly' and 'Location' had the maximum number of statistically significant regression coefficients in the respective equations for the two composite variables which they were part of. The rest of the variables— age, gender, similarity of language spoken at home with the medium of instruction at school, the time a child spent in watching television, and the score on Word Knowledge were entered as they were along with the three composite variables to estimate their con-

¹¹ With large differences noted between States, this seemed a better approach than a common set of weights. The pattern of difference between groups -- be they boys/girls, urban/rural or on the basis of caste -- supported this decision.

¹² It has been pointed out in the earlier section that the more predominant caste group in the State tended to have highest achievement.

tribution to the differences in achievement in language and arithmetic.

The use of two criteria separately threw up some interesting questions in methodology. A replication became available within each State so far as 'achievement' was concerned. If the signs of the regression coefficients were the same, it was a source of confidence, but if some were different, explanations were hard to think of. Further, samples from 23 States could be considered as several observations from similar (in this case, not the same) population. Going over the entire set of data 'Word Knowledge' had consistent signs in all the States. It was followed closely by Facilities for Learning (22%), Home Background and Similarity of Language. The least reliable was Gender with only 50% of the signs being consistent. It may be mentioned again, that differences in the achievement of boys and girls in arithmetic and language were noticed.

One could also look at the statistical significance of the regression coefficients of these variables as an evidence of their role in being associated with achievement. Again, all the regression coefficients of Word Knowledge with the exception of one were statistically significant. The exception was the equation for Arithmetic in Sikkim, the data on which was not considered reliable. It was followed by Facilities for Learning and Home Background. 'Age' had the least number of significant regression coefficients.

The final and most important was the contribution of each of these variables to the explained variance.

More variance in scores on Reading Comprehension was attributable to pupil-related variables than in the case of Arithmetic. Apart from learning alphabets, chil-

dren can pick up a language¹³ on their own to a much larger extent than they can learn the specifics of arithmetic.

The scores on Word Knowledge were taken as a surrogate for pupil ability.¹⁴ It accounted for most — more than 70% — of the explained variance. With a large percentage of illiterate or barely literate parents and economically modest homes, a child's ability could become the sole variable contributing to differences in learning. Home Background and Facilities for Learning followed with small contributions. It may be noted that Gender and Time to Watch TV made a larger contribution to R^2 in relation to arithmetic than language. While gender differences in arithmetic were noticed earlier, the higher relationship of time spent on watching TV with arithmetic was not easy to explain. The economic status of the family could be the underlying variable.

Word Knowledge, which was entered as an independent variable along with seven others in the multiple regression analysis, contributed the largest proportion of the variance explained. Over the States the average was nearly 70%, leaving very little in several States, that could be associated with other variables. Doubts were raised by some colleagues whether one of the reasons for this very high relationship was not the 'achievement' part in the test, obstructing the emergence of the real contribution of other background variables. Regression analyses were re-run, eliminating the score on Word Knowledge as an independent variable.¹⁵ Data with respect to both the criterion variables are given in Table 6.6.

The first column gives the total R^2 in two parts, the first figure giving R^2 associated with Word Knowledge and the second contributed jointly by all other indepen-

Table 6.5

CONTRIBUTION OF PUPIL-RELATED VARIABLES TO DIFFERENCES IN ACHIEVEMENT*

	<i>Word Know- ledge</i>	<i>Home Back- ground</i>	<i>Facilities for Learning</i>	<i>Edu- cational Environ- ment</i>	<i>Similarity of Language</i>	<i>Age</i>	<i>Time Watch TV</i>	<i>Gender</i>	<i>Total</i>
RC 1	15	21	18	11	06	06	07	03	
R^2	2033	0121	0062	0034	0025	0013	0007	0004	2788 ¹³
Arth 1	12	16	13	10	04	05	06	07	
R^2	1111	0078	0036	0012	0020	0006	0016	0021	1917

* All values given in this table are medians over all the States.

¹³ For most children it was their mother tongue or the language spoken by the majority of the people around them.

¹⁴ Word Knowledge frequently finds a place in tests of intelligence, its correlation with tests of mental ability is usually very high.

¹⁵ The exercise was not carried out for all the States or for both the criteria.

Table 6.6

CONTRIBUTION TO R^2 WITH AND WITHOUT THE SCORE ON WORD KNOWLEDGE

State	Reading Comprehension		Arith	
	$R^2 + R^2$ W.K. rest	R^2 (without W.K.)	$R^2 + R^2$ W.K. rest	R^2 (without W.K.)
Andhra Pradesh	3.5 + 3.3	4.0		
Assam	25.9 + 1.0	7.5	23.7 + 3.9	7.2
Bihar	47.2 + 1.8	8.5	38.5 + 1.3	6.3
Gujarat	34.6 + 2.2	5.4	28.9 + 2.8	5.7
Haryana		Not carried out		
Jammu	22.2 + 4.4	9.3	12.7 + 4.9	8.4
Karnataka	16.6 + 1.4	5.0	14.6 + 1.5	4.5
Kerala	12.5 + 6.8	10.3	11.0 + 2.0	4.3
Madhya Pradesh	13.7 + 14.1	14.6	23.4 + 4.3	8.8
Maharashtra	32.8 + 4.9	17.5	29.9 + 3.0	13.5
Meghalaya		Not carried out		
Mizoram			4.3 + 3.9	5.0
Nagaland			3.7 + 5.2	5.9
Orissa	20.3 + 4.4	9.1	19.7 + 4.3	9.1
Punjab	21.9 + 5.6	12.2	19.1 + 2.7	7.4
Rajasthan	25.5 + 1.3	3.7	17.8 + 1.3	3.0
Sikkim	30.5 + 15.5	24.8		
Tamil Nadu	14.1 + 2.4	4.0	13.7 + 3.7	5.3
Tripura		Not carried out	9.5 + 1.3	3.4
Uttar Pradesh	27.5 + 1.3	3.3	24.8 + .9	2.7
West Bengal	16.2 + 3.6	8.1	15.6 + 2.0	5.0
Delhi	28.3 + 5.6	13.4	18.5 + 4.2	9.2

dent variables. The second column gives the total R^2 associated with the rest of the independent variables when Word Knowledge was not entered. The values in the second column when compared to the second part of the first column, change only to a small extent. In most States, a very small part of the R^2 associated with Word Knowledge is shifted to the 'rest of the variables'; the exceptions were Bihar, Maharashtra, Orissa, Punjab and Delhi. In all these States, the total R^2 was on the high side -- above the country median. Nevertheless, the unique contribution of Word Knowledge remained high, i.e., relative to the total variance explained.

Rationally, an individual's basic ability would be the single most important determinant of his/her achievement. On the basis of the data available in Table 6.6, the use of Word Knowledge as a substitute for ability was considered justified.

For certain reasons, the data obtained about the background of teachers, the practices they adopted and the facilities available to them was not analysed rigorously in relation to differences in pupil achievement. However, the same were scrutinised roughly by comparing the statistics available from the four States achieving the highest¹⁶ averages with as many at the lowest¹⁷ end.

A clear relationship between the achievement of pupils in the State and the extent of in-service education made available to the teachers was visible. The underlying variable could be improved teacher competency or the concern of the State educational authority about the system. A weak relationship with the proportion of untrained teachers in the State was also noticed; the smaller the proportion of untrained teachers, the higher the average achievement. Once again, the relationship may not be a direct one. A higher proportion of untrained teach-

16 Mizoram, Punjab, Gujarat, Bihar and Andhra Pradesh were not included

17 Karnataka, Tripura, Nagaland and Madhya Pradesh

eis could also mean rapid expansion of education (without enough preparation) This situation would also imply a large number of first-generation learners

A negative relationship was noticed between the number of graduate teachers in the primary schools and the State means The graduates were not always trained Some States, for example, Nagaland and Madhya Pradesh, could have recruited more graduate teachers either because of non-availability of enough trained teachers or in desperation to improve levels of learning But it was likely that there were other underlying variables. One of the States, for example, said that the minimum required qualification for the primary school teacher was successful completion of secondary school plus a diploma in teacher education for the residents of the State and graduation for non-residents Graduate teachers in this State may not develop close affinity with their pupils In general, a university graduate, particularly the one not trained to teach, may not feel settled in the job Thus the likely advantage of better knowledge of the teachers could get more than nullified

There was a tendency of the experience of the teacher to have a negative bearing on achievement Among the teachers recruited earlier, more could be less educated or untrained. Boredom may set in In the absence of a support system, teachers could be losing touch with new knowledge, while the curricula do get revised from time to time

It was noticed that teachers spent less time in travelling to and from school in the high-achieving States Whether the time thus saved was being spent in job-related activities or whether it was the sensitivity of the administration to the welfare of the teachers, cannot be said with confidence

Permissive environment in the classroom was positively related to achievement. That it would encourage children to take the initiative was obvious, it might also mean better educated teachers with confidence in their own skills. The strongest relationship was with in-service education.

School-related Variables

Data regarding the professional preparedness of the headmaster, the type of administration, the policies adopted and the facilities provided by the school as obtained on the School Questionnaire were analysed to identify such variables as would make a difference to pupil achieve-

ment There were 31 independent variables Efforts to combine some of them together to reduce the number were soon given up There were only some variables which could be combined together, e.g., facilities which would be related to teaching-learning but mutual low correlations and the small number which could be grouped under a broader head discouraged this approach

When regressed with the criterion variables, only a few independent variables made a significant contribution to R^2 , this was expected but the variables changed to a large extent over the States; this clouded generalizations This should, of course, be seen in light of the findings related to differences in the achievement of pupils wherein differences between States had emerged very strongly When simple spread of frequency on variables was seen over the States, school systems within States seemed different from each other It was suspected that the underlying variables for a similar picture over two States could also be different as was indicated by the sign of 'r's For example, Percentage Attendance had negative 'r's (with both arithmetic and language) in Gujarat but positive signs in Maharashtra and Nagaland Similarly Books in the Library had positive 'r's (with Reading Comprehension) in Andhra Pradesh, Mizoram and Tripura but negative signs in Madhya Pradesh and Rajasthan A few generalisations offered in the paragraphs that follow are based on (i) significant contribution of the variable to R^2 in at least one-third of the States, as also (ii) on reasonable consistency of the contribution to both the criterion variables. In the case of the second alternative, the criterion of significant increment to R^2 was relaxed to some extent¹⁸ School means were used as score on the criterion variables

The proportion of SC/ST pupils in the school and 'Age of the Pupil' accounted for the variance arising out of differences between the average achievement of schools. Differences were noted for caste groups within several States, the same phenomenon was, probably reflected in school means to the extent the schools had different proportion of SC/ST (or other caste) children The concentration of particular groups, especially ST children, was due to their predominance in some areas. Nearly two-thirds of 'r's, considering the two criteria together, were negative, supporting the general impression of the poorer achievement of socially deprived groups If in a State the teachers were from high-caste groups, the absence of empathy or even a more negative attitude could affect pupil learning Contamination

¹⁸ In the tables in the Appendix, the unique contribution to R^2 are recorded All of these were not statistically significant but F in most cases was > 2.00 . In a rare case when R^2 for one of the criterion variable was significant, even a smaller contribution (i.e., with $F < 2.00$) for the other criterion variable was retained It helped understanding and interpretation of data within a State. More details can be seen in the State reports

by variables like poverty and lower parental education were also suspected

If the average age of the pupils of a school was higher, there was a tendency for the mean achievement to be lower. The direction of the relationship was not consistent over the States—it was not for any of the variables. On the one hand, the older age-group could include many repeaters whose achievement could be low for several reasons, on the other, some schools within a State could be admitting children in Class I at a higher age, i.e., 6+ instead of 5+¹⁹. The evidence was not strong enough to think that advancing the age of admission by a year could improve the achievement of pupils.

'No Detention Policy', existence of a PTA and 'Facilities for Teachers' contributed to differences between schools in some States. Since the direction of the relationship, as indicated by the sign of 'r', was not consistent over the States interpretations were hard to elaborate. For 'No Detention Policy', positive and negative 'r's were almost evenly distributed. If 'No Detention Policy' was used as intended to encourage children to remain in school and help them to learn, it could have a positive relationship, but if children were promoted to obey a directive and permitted mainly to sit in classes, it would tend to lower average achievement.

Similarly, a PTA could play a constructive role or obstruct the smooth functioning of the school by its interference. By and large, existence of a PTA seemed to have a positive impact on the achievements of the schools in a State. Negative correlations were noticed in Kerala and Tripura (with RC only). Teachers' unions in Kerala are very active.

The availability of facilities for teachers such as chairs, tables, storage for copies and teaching material, chalk and duster made a positive contribution in raising standards of learning and probably of teaching. It may be added that along with the physical facilities *per se*, the involvement of the State administration in improving the primary school may be the contributing factor. Space, quantified in terms of a separate place for each class group, had nearly the same situation as facilities for teachers. Although both these variables were likely to be affected by the 'classes in school' as most middle and secondary schools would, in general, have better physical facilities, a part of these gets passed on to the primary section as well.

Three other variables, teaching experience of the headmaster, time devoted to teaching arithmetic, and

benefit of Operation Blackboard, also contributed to differences among school means in some of the States.

Although a statistically significant contribution to R^2 in any one State was made by only few variables, the total added to large values²⁰.

It is reiterated that a generalised statement about factors contributing to differences in schools could not be made with much confidence. The school systems seemed to differ from State to State not only on some of the variables, information on which could be obtained, such as qualification of teachers, physical facilities for teachers and pupils, etc., but probably also on variables not identified and not measured such as the concern of the administration and attitudes and involvement of teachers and communities. With these handicaps, the proportion of SC/ST pupils in the school, age of the pupil, implementation of the 'No Detention Policy', the existence of a functional Parent Teacher Association, facilities for teachers, sufficient space in the form of separate classrooms, teaching experience of the headmaster, time devoted to teaching arithmetic and availability of a minimum amount of material as expressed by Operation Blackboard seemed to have some impact on school achievement.

Differences Arising out of Pupil-related and School-related Variables

The reader would recall that regression analysis were carried out to estimate contribution of pupil-related variables including their home background and school-related variables to differences in achievement. The contribution of each set of variables varied from State to State. It was hypothesised that: (i) the variance explained by pupil- and school-related variables would tend to be compensatory, i.e., the low variance explained by one set of variables would tend to be supplemented by high variance accounted for in the other set; (ii) the school-related variables would play a more significant role towards differences in arithmetic than in language. The former was not supported at all. Looking at the two columns under Reading Comprehension in Table 6.7 it can be seen that both the values listed under R^2 were high in Assam, Haryana, Meghalaya, Punjab and Delhi. With the exception of Delhi, the mean achievement was also high in these States. On the other hand, R^2 s for both pupil- and school-related variables were low in Andhra Pradesh, Karnataka, Kerala, Tamil Nadu, Orissa and West Bengal. With the exception of Andhra Pradesh,

¹⁹ Even where 5+ is the permissible age for admission to Class I, several private fee-charging schools admit children at the age of 6+ Generally, such schools also have pre-school programmes of long duration, providing a dual advantage to their pupils.

²⁰ It can be seen in Table 6.7.

the aggregate means of these States were lower than the median values, Orissa represented the median value. All the four States from the south were grouped here. The picture was almost similar for Arithmetic.

The school related variables did appear to be more significant for Arithmetic than for Reading Comprehension. The median value of R^2 for this group of variables was higher for Arithmetic. The reverse is true for the pupil-related variables. While the role of the school seems nearly equally important for learning language, home background seemed to contribute more towards learning of language. It was difficult to guess the variables that could account for differences in the States where

both R^2 (cumulative) were very low, the same had, obviously not been touched.

Differences Over States

Are the achievements of pupils different in the States? This was one of the major questions that the study was addressed to. The necessary steps taken in developing common tools and drawing representative samples have been explained in the earlier parts of the report. The achievements of pupils varied over the States to a very large extent.

Table 6.7

CONTRIBUTION OF PUPIL AND SCHOOL-RELATED VARIABLES TO DIFFERENCES IN ACHIEVEMENT

States	R^2			
	Reading Comprehension		Arithmetic	
	Home and Pupil Related	School Related	Home and Pupil Related	School Related
Andhra Pradesh	067	228	015	201
Arunachal Pradesh	132	417	061	399
Assam	299	339	.276	299
Bihar	489	186	398	219
Gujarat	368	.196	317	221
Haryana	392	391	363	441
Jammu	266	376	176	349
Karnataka	180	182	161	171
Kerala	193	197	131	164
Madhya Pradesh	279	259	278	371
Maharashtra	378	.300	329	241
Meghalaya	392	.641	510	783
Mizoram	097	.734	082	424
Nagaland	090	797	.089	888
Orissa	247	184	241	148
Punjab	.275	483	218	377
Rajasthan	267	.090	192	182
Sikkim	452	—	074	—
Tamil Nadu	165	107	174	142
Tripura	.216	513	.108	481
Uttar Pradesh	288	104	257	117
West Bengal	.199	.089	177	105
Delhi	341	507	.227	415
Range Minimum	.067	090	045	105
R^2	(AP)	(Rajasthan)	(AP)	(WB)
Maximum	.489	.797	509	783
	(Bihar)	(Nagaland)	(Meghalaya)	(Meghalaya)
Median	267	259	.177	299

Table 6.8

MEAN SCORES OF PUPILS IN VARIOUS STATES

State	Entire Sample	Capital city
Bihar	143.5	142.2
Mizoram	117.5	123.5
Gujarat	112.3	99.3
Punjab	111.9	157.8
Andhra Pradesh	109.8	125.5
Meghalaya	106.9	143.1
Uttar Pradesh	104.5	113.3
Haryana	103.5	163.2
Assam	103.0	104.1
Rajasthan	102.7	91.3
Maharashtra	93.9	111.2
Orissa	93.5	95.1
Tamil Nadu	91.2	89.3
Delhi	90.5	86.1
Sikkim	90.4	94.0
West Bengal	88.7	98.9
Jammu	87.5	—
Kerala	85.5	108.0
Arunachal Pradesh	82.8	83.2
Madhya Pradesh	77.6	42.9
Nagaland	72.9	74.6
Tripura	71.8	82.1
Karnataka	65.8	59.9

In the table the States have been ranked on the basis of aggregate scores on all the seven tests. The total score of Nagaland, which did not administer Tests 6 and 7 was increased proportionately for the common maximum possible score. Detailed information regarding achievement on each test can be seen in the tables in the Appendix.

The States tended to broadly maintain their ranks over the tests as can be adjudged from the table of

correlations between the State means in different tests.

Bihar stood out as very different from the rest of the country. As the support for this status of the State was not available from any other source, including findings from other studies²¹, or the general impression, comments on its top position are reserved till the high achievement is reconfirmed. The next highest aggregate from Mizoram was 80% higher than the lowest average noted for Karnataka.

Table 6.9

RANK CORRELATIONS BETWEEN MEANS IN DIFFERENT STATES

Test	T_1	T_2	T_3	T_4	T_5	T_6	T_7
T_1	—	74	60	53	64	59	57
T_2		—	71	54	68	66	59
T_3			—	52	62	57	48
T_4				—	52	51	52
T_5					—	63	55
T_6						—	70
T_7							—

²¹On the contrary, in the survey conducted with regard to the project 'Primary Education Curriculum Renewal', the scores of pupils in Bihar were the lowest in several classes.

The States could be seen clustering in five groups with Mizoram, Punjab, Gujarat and Andhra Pradesh on the high side and Madhya Pradesh, Nagaland, Tripura and Karnataka at the lowest end. It was difficult to see common elements in these clusters.

Very broadly speaking, States in the northern parts of the country, particularly the north-west, tended to do better. Of the four States in the south, three had mean scores below the median²². Only Andhra Pradesh was in the first quartile. This State had received special assistance from the U.K. in the recent past for the improvement of primary education. Under this assistance, most of the teachers were trained to adopt activity-oriented child-centred approaches.

Of the States in the north-eastern region, Mizoram was an exception²³. Tripura, Nagaland and Arunachal Pradesh all had low scores. This picture is supported by data available from the selection tests conducted by the Navodaya Vidyalaya Samiti in the year 1988-89. Of the

twenty States of this survey for which data were available from the selection tests, Mizoram had ranked 3rd and 4th on the tests in language and arithmetic, respectively.

Rank correlations between the total mean scores of the States and rate of literacy and Gross National Product were found to be .23 and .18 respectively. The number of observations being only 23, neither of these was statistically significant. The per capita expenditure on education, too, did not seem to have any apparent bearing.

According to the estimated expenditure for 1986-87, the highest per capita expenditure was being incurred in Nagaland, followed by Arunachal Pradesh, Mizoram, Kerala, Jammu, Tripura and Sikkim, in that order. With the exception of Kerala, all other States could be spending more money because of the kind of terrain and the low density of population, and not necessarily for providing better learning opportunities.

The school-related variables were correlated with State achievements as shown in Table 6.7.

Table 6.10

CORRELATIONS WITH ACHIEVEMENT - BETWEEN STATES

<i>Variable</i>	<i>RC</i>	<i>Arith</i>
Professional Training of the Headmaster	.06	.05
Age of the Headmaster	.03	.01
Teaching Experience	.02	.00
Experience as Headmaster	.03	.06
Location	-.05	.01
Administration of the School	.09	.04
Boys/Girls/Co-ed	-.01	.02
Pre-primary Classes	.08	.00
Classes in School	-.02	.00
Years of Existence	-.02	-.03
Working Days	.02	.03
Total Enrolment	.06	.02
Proportion of SC/ST	-.07	-.02
Age of the Pupil	-.08	-.10
Teachers Untrained	-.10	-.10
Teachers per Class group	.00	-.01
Rooms per Class group	.04	.02
Room for Headmaster	.02	-.03
Facilities for Teachers	.03	-.04
Facilities for Pupils	.06	-.01
Books in Library	-.05	.08
Book-Bank	.02	-.03
No-Detention Policy	.08	.05
Incentive Schemes	-.06	-.04
Financial Freedom	.03	.01
Percentage Attendance	.02	.01
Time given (Language)	-.03	-.07
Time given (Arithmetic)	.01	-.03
Operation Blackboard	.05	.08
Parent Teachers Association	.05	.08
Special Projects	.00	-.01

22 Kerala explained that the two districts chosen in the sample from the State happened to be particularly backward. It is supported by a much higher mean from the city of Trivandrum as compared to the mean scores of the two districts.

23 Doubts have been expressed about the representativeness of the sample from Meghalaya.

The highest values of correlations were observed for 'Age of the Pupil' and 'Teachers Untrained'. Both had negative r 's with the criterion variables. While a negative relationship with the percentage of 'Teachers Untrained' was more easily understandable, the same could not be said about 'Age of the Pupil'. The age of entry in a State could be 5+ or 6+ but the same was not likely to affect the cumulative learning of four years. The range of average age was 1.6 years. Moreover, the relationship was negative, implying higher average age being associated with low achievement. It should be seen along with small positive r 's with 'No Detention Policy'. A high score was given to the school which detained non-achieving children or detained children in lower grades. Thus, if children were not detained (for unsatisfactory achievement), they would tend to be younger in Class IV but would not necessarily achieve at the expected level. If children were detained for non-achievement, more of them would drop-out of the system, if they were promoted to the next grade, regardless of their achievement, the quality of learning was likely to suffer. Nevertheless, it would bring about a negative r with achievement. Other variables which seemed somewhat related to achievement were 'Administration of the School' (in favour of private schools), 'Number of Books in the Library' (difficult to explain -ve r 's), 'Operation Blackboard' and existence of 'PTA' - the last two had a positive impact on achievement. There was a great deal of variation in the percentage of private schools in the States, with Mizoram reporting only 1.6% schools as private or private aided, and Kerala nearly 50% in the same category. Similarly, the average number of books in the library varied from 42 in Tripura²¹ to more than 1,200 in

Karnataka. The picture regarding implementation of OB and the existence of a PTA was similar.

To summarise, the States differed widely from each other. It can be said with some confidence that the variation arising because of translation of tests in different languages would be minimal.

Till a few years ago, school education was totally a State subject, since 1976 it was put on the concurrent list. But State administrations are still free to decide curricula, design textbooks or determine the minimum education required of teachers. Directions are provided by the central government, particularly on the structure and the core curriculum but there is no enforcement. Even behind apparent similarities, differences did exist in the systems. Differences in industrialisation, previous levels and history of education, income levels, occupational patterns and caste compositions could all contribute to the motivation for achievement.

It was noticeable that some of the States that had a very high rate of literacy did not necessarily have better achievement. Kerala had 90.6% literacy in 1991; its rank was 18th in the table²⁵. Maharashtra has a much higher percentage of literate persons—63%—as compared to the national average of 52%, but it came close to the median achievement in this survey. Andhra Pradesh with 45% literate population achieved relatively higher. The relationships with the variables explored were found to be small.

It may be mentioned that large differences were also noticed among regions within States, Kerala was only one of the examples. A large number of school- and teacher-related variables would be constant, at least as prescribed, the reasons for differences would have to be searched elsewhere.

²¹ Meghalaya, at the lower end, was not considered because of the unrepresentative nature of the sample of schools.

²⁵ To be interpreted in light of the comment from the State on the sampling of districts.

Findings and Conclusions

1. The country average of the pupils of Class IV on the battery of tests used was 45%. Although the data from schools, where mass copying or, rather, dictation of correct answers was suspected, was eliminated from analyses¹, there was no way to detect help with a few items or help to some pupils within the group. The obtained average of 45%² can be considered as an estimate on the high side. Some support to this statement was available from a chance replication by a Ph.D. student who administered these very tests to pupils of Class IV of the schools included in this sample in one of the States, a year later. Her means were lower approximately (but consistently) by 15% or so. Absenteeism on the date of testing and elimination of data from largely unattempted scripts would also tend to improve the average.

By itself, an average of 45%, from systems which consider 33% to 35% success satisfactory, would have been quite acceptable, but seen along with the low retention ratio of 56% of the group enrolled in Class I it demands greater attention to the functioning of the system. The average score in Reading Comprehension was poorer than that in Arithmetic. Around this country statistic the State averages varied from 32% to 57%³ in the aggregate. The picture was similar for achievement in arithmetic or language. It can be said with some confidence that the variations were not due to differences in the syllabi. Scores on the test in arithmetic were broken topic-wise, and in none of the States the average on any one topic was so low as to suggest that the pupils had not known the topic.⁴ Explanations for differences will have to be found elsewhere.

These differences raise questions regarding the use of common tests for selection of students for either the National Talent Search, or the Navodaya Vidyalayas. The quota system may not deprive or benefit the students from any State but the reliability of selection in the States with very high or low averages may not be satisfactory.

While the desirability of comparable (or common) curricula may not be questioned, successful simultaneous implementation would look doubtful.

The carry-over of the differences at the primary level to the later stages of school education needs to be investigated.

2. There was evidence (very limited) that the teacher's knowledge of the subject-matter was highly inadequate. In one of the States with a low average in this study, 70 primary school teachers responded to the tests in arithmetic and reading comprehension used in the survey. In arithmetic, the average achievement was less than 75%. Only one teacher had the maximum possible score of 40. Ten per cent teachers scored less than 50%. Some items were not attempted by 25% of teachers, pointing to the inadequacy of knowledge at this level.

In language (Reading Comprehension-paragraphs) the situation was comparable to the extent that the median score achieved was less than 75%. The maximum score did not go beyond 93% and the minimum achieved was as low as 16%. Nearly 15% teachers could mark only half the items correctly. While systematic guessing was not suspected of children, accidental correct score for the teachers on this account is not ruled out. Moreover, the correct answer could be identified on the basis of hazy knowledge but the same is not useful in teaching.

3. Better textbooks do not seem to have helped very much. For example, the latest books in arithmetic produced by the NCERT and adopted/adapted by several States clarify the concept of Least Common Multiple by breaking large numbers to the smallest factors and then deriving the LCM. In the test used in this survey children were asked to calculate the LCM in three different situations. The simplest, as taught by most teachers, was presented in Q 10. of the test. The pass percentages varied between 25% (Kerala) to 80% (Punjab)⁵, with the median for all States at 49%. The achievement could be considered reasonable.

1 The number of schools was not very large.

2 Median value.

3 Bihar is not included.

4 See Table in Appendix.

5 The statistics obtained in Bihar are omitted because of unusually high scores.

The second question at S.No. 11 involved understanding of the concept. The pass percentage varied from 13 (Arunachal Pradesh) to 30 (Punjab), with the median at 21. The contrast between the statistics obtained for two consecutive questions clearly pointed to mechanical teaching and learning. It is not known how many teachers will be able to answer this question correctly. The third question at S.No. 39 was asked in the manner in which the topic is introduced in several textbooks. The pass percentages varied from 11 (Madhya Pradesh) to 41 (Meghalaya) with 23% as the median, indicating limitations of teaching.⁶

4. On the whole, there was no difference in the achievement of children from urban or rural area but in 80% of the States the two groups differed from each other, with the average achievement getting divided nearly evenly in favour of one or the other group. No differences were recorded in Arunachal Pradesh, Orissa, Punjab, Sikkim and Uttar Pradesh. The urban group had higher averages in Andhra Pradesh, Haryana, Jammu, Karnataka, Kerala, Maharashtra, Meghalaya, Tripura, West Bengal and Delhi. The picture was reversed in the rest of the States.

If in a State, the rural area was more cut off because of the absence of road/rail transport, more teachers could be reluctant to work in villages, affecting the quality of teacher that would be pushed to these schools. The occasional visit of the supervisory staff may also be rare; so could be the availability of essential material for teaching and learning. Lack of exposure to the world outside and absence of opportunities for their wards to study further or seek work elsewhere would leave the parents also cool towards their children learning school tasks.

On the other side, easy access to an 'English-medium school' would also take away children of the higher educated (and richer) parents from the schools from which this sample was drawn. The States need to look into their systems to design compensatory measures for the group that needs more support.

5. There was a general tendency for the achievement of children in the capital cities to be higher than in other parts of the State. The children in capital cities were better in two-thirds of the States, in the rest the direction was reversed.

6. Over the States, differences between the aggregate achievement of boys and girls did not have the same direction. Differences in favour of boys were noted in Rajasthan, Tripura, Uttar Pradesh and West Bengal. The reverse was true in Meghalaya, Punjab, Sikkim and Delhi. No differences were seen in Jammu, Kerala and

Tamil Nadu. For the total score on all the tests, the boys had higher mean achievement than the girls. There was also evidence of social bias and lack of opportunity for girls to do well in certain tasks. Change in the attitudes of the society — towards which teachers should help — is called for.

7. For the entire country the Backward Classes and Others as a group did better than SC and ST pupils but there was a strong tendency for the most numerous group in the State to have the highest average score as well. This could have resulted from textbooks and other organised learning being based on the experiences of the majority group. A larger number of teachers could be from the most numerous community, they would have greater affinity with their own State and, in the worst situations, may even be partial to them. Textbook writers and teacher trainees need to be made aware of these phenomena so that conscious efforts at looking after the minority communities are made. The strength of this tendency could be related to the intensity of caste/clan affiliation in a State.

There is need to check whether such biases work against the minority groups so designated on the basis of religion or language.

8. There is evidence of deterioration in achievement in Class V. Aggregate mean scores of small groups (200 or more) of students of Class V selected from some of the schools of the sample chosen were lower in 15 out of 23 administrative units participating in this study. After considering some likely reasons for the lower means, it could be said that there is evidence of deterioration in the achievement of school-related tasks.

The finding is in line with the information available from studies conducted earlier. It has been commented upon by several researchers that the learning levels in India decline as children move up the class ladder. But in most earlier studies the tests used for different class groups were based on the syllabi designed for the particular classes. The conclusion drawn implied that the pupils could not keep up with increasing expectation. In this study, the children of Classes IV and V responded to the *same tests*, and still the averages for Class V were lower. The lower mean score in arithmetic could be explained to some extent but the same being lower in language presented a more difficult situation.

The finding should be rechecked under more controlled situations, eliminating possibilities of extraneous variables, such as helping pupils mark correct answers, thus contaminating the data. It is likely that the primary school teacher can go this far and no further, and once

⁶ This item, being towards the end of the test, was probably not responsible for the low percentage of success as the item next in serial order had a median pass percentage of 45.

'this far' is reached, for lack of movement ahead boredom sets in and deterioration in skills and competencies acquired at less than mastery level begins. Specific work is needed to investigate this hypothesis and some other questions such as: Are there some competencies which deteriorate more than others? What is the picture over Classes VI to VIII? How much of the basics is retained by children said to have successfully completed five years of primary education, say after 3 to 5 years?

There is also need to investigate knowledge of the subject-matter the primary school teacher is expected to teach. The very limited evidence available from one of the States, quoted on page 48, was very discouraging. Larger studies spread-over various States need to be undertaken.

9. The achievement of primary school children differed widely over the States. The curricula at this level in the two basic subjects investigated in this study were not very different from State to State. There were differences in the basic facilities, in qualifications of teachers—not so much in the minimum required but of those employed—type of administration, etc., but the differences in mean achievements did not get related to these formal nomenclatures. Nor did they get related to the practices adopted by the school teachers, i.e., as reported by the teachers.⁷ To the extent certificates are falsified and employment is secured on bases other than merit, it would affect teaching in two ways—incompetence as well as lack of faith in achievement or success in school having any bearing on one's future. It would also encourage teachers not to permit evidence of learning or rather lack of it to surface. It is guessed that the situation regarding cheating in examinations and the manner in which teachers are appointed and transferred are different in the States, particularly those on the two extremes of achievement continuum.

Effect of poor learning can set a trend of a downward slide.

Intensive investigations regarding what is taught and how in the classrooms are needed to comprehend causes of poor learning in schools. Hardly any information is available on this aspect.

10. A pupil's ability had the maximum influence on his learning of school-related tasks; it was followed by 'Home Background' variables, 'Facilities for Learning' and 'Educational Environment at Home'. The pattern was

reasonably consistent over the States, however, the strength of the influence differed.

11. The variables related to schools and teachers that seemed to influence achievement varied to a much larger extent from State to State making generalisations more difficult. Within this limitation the school variables that seemed to have some relationship with achievements were proportion of SC/ST pupils, 'Age of the Student', 'No Detention Policy', 'PTA', 'Facilities for Teachers', 'Availability of Space' for organising teaching, amount of 'Time devoted to Teaching' (arithmetic) and help received under Operation Blackboard.

12. No generalisation could be made regarding the mutual role of home- and school-related variables *vis-à-vis* differences in achievement. It is suspected that existence of a certain facility, for example more books in the library, may not necessarily mean utilisation of the same, which really was the implied variable. Intensive study of a small number of schools, specifically identified for differences in practices adopted may throw some light on it.

13. There was evidence of positive impact of the extent of in-service education received by the teachers on pupils' learning. Graduate teachers, *per se*, did not seem to raise levels of learning but 'Untrained Teachers' had a small negative correlation with the average achievement of a school. The variables should not be taken at their face value. In-service education could be more or less specific to what is required at a particular point of time. It could also reflect involvement of the administration of a State with improvement of the quality of education. Similarly, the untrained teacher may have the handicap of not having received professional education or just being 'not settled' in the job. Graduates could be dissatisfied with their position and looking out for other opportunities.

The positive impact of in-service education of the teachers can be concluded with some confidence.

14. There was weak evidence of 'No Detention Policy' having a negative influence on achievement. As all the headmasters did not seem to keep to the stated policy of administration, the evidence got diluted. The deviation between the statements made and practices followed is not ruled out.

It is also likely that the once-issued directive was not known to the headmasters or teachers recruited a few years later.

⁷ The information provided by teachers did not match with the reality generally reported as observed. Most teachers said they produced and used material other than textbooks, paid attention to the weaker pupils, etc. It is likely that these were their perceptions or that the statements were exaggerated to desirable answers in self-defence.

PART II

State Reports

This part contains brief reports of the achievement of primary school children in each of the participating States. Details regarding objectives of the study, sampling design and development of tools can be seen in Chapters I-III of the report. As the major objective of the study was comparisons over the States, findings specific to a State did not get highlighted. But the States can make use of the same for better understanding of their own systems. This becomes particularly relevant in the light of the large differences between States on most of the variables.

To avoid repetition, some of the common steps taken in the analysis of State data are detailed below.

Although the sample of schools was drawn so as to give a representative sample of pupils of the State, deviations from the original list of selected schools supplied were noticed in several States. Representativeness of the State samples were checked by comparing some of the statistics obtained from the sample with those available from the Fifth All India Education Survey of 1986. The comparison is summarised in Table 2 of the State reports.

While studying the factors related to the pupils, educational environment data regarding the home background of the pupils, educational environment in their homes and the facilities available for better learning were collected through a questionnaire. Personal data regarding gender, age, etc., were also collected. To understand which of these variables were related to pupil perfor-

mance, regression analysis was carried out against two criteria--scores on Reading Comprehension (total) and Arithmetic. Before the analysis, data on groups of variables were combined to obtain composite scores against both the criteria but the composite variables obtained by using Reading Comprehension were used for the final analysis.

A similar exercise was undertaken to study the influence of the school-related variables. Information obtained from the headmasters about their own qualifications and experience, facilities available, the policies and practices followed in the school were regressed against achievement on two criterion variables (teacher-related variables were not used)¹. In this part of the analysis, the average achievement of all the pupils of Class IV of the school who responded to the test battery was used in place of the scores obtained by the individual pupils.

A common observation on the data from all the States is that the school means differed from each other only a little less widely than the scores of the pupils. Apart from schools being genuinely different from each other, several school means tended to be as large or as small as the scores obtained by the pupils because of the small number of students that responded to the tests from those schools. When there was only one pupil, the school mean was the same as the score of the pupil.

Any other detail, including the comparison of mean achievement of States, can be obtained from the relevant chapter in Part I of the report.

¹ As the achievement of the pupils was the end product of four years of schooling and teachers in most States were transferable, it was not considered appropriate to relate teacher data with pupil achievement. Also, sub-sampling of teachers in a school was left to the field staff, biases in selection of teachers were suspected in some States.

Andhra Pradesh

Andhra Pradesh was requested to administer tests to approximately 5,700 children who were to be drawn from at least 285 schools selected from the list provided by the State. As the number of schools was decided on the basis of average enrolment, expecting shortfall in attendance, an additional list of schools was also provided so that the target of pupil sample could be reached. The following table gives details of the sample from which data were analysed.

Table 1.1

SAMPLES PLANNED AND ENTERED IN ANALYSIS

Region	No. of Schools		No. of Pupils
Capital city	27 ¹	30 ²	675
Rayala Seema	119	178	2254
Pelangana	67	60	1290
Coastal Andhra	72	98	1478
Total	285	366 ³	5697
			4691 ⁴

The State returned data from 376 schools but 10 schools were eliminated right in the beginning for reasons of large scale non-response and zero standard deviations in most tests pointing to copying, etc.

The number of schools from which data were collected turned out to be larger in most regions for a smaller than expected number of pupils. The average attendance of all the classes in primary sections reported by the headmasters was nearly 80%, but the number of schools to be included turned out to be, proportionately, still higher. The maximum 92% of pupil sample was

reached in Coastal Andhra, the highest shortfall of pupils was in Rayala Seema. This region also had the lowest aggregate mean giving the State some advantage in average scores.

In Table 1.1, the obtained sample was compared with the one designed region-wise. Assuming regional differences, equal ratios between obtained and planned samples over the regions would not disturb the composition of the sample. A large deviation may disturb its representativeness *vis-a-vis* the population. Another approach was used to check the relevance of the sample in relation to the population by comparing some of the statistics obtained from the sample with those available from the Fifth All India Educational Survey conducted by the NCERT. The survey statistics pertain to September 1986.

Table 1.2

SAMPLE AS COMPARED TO THE POPULATION

Variable	Percentage	
	1986 Survey	Sample in the Study
Primary (only) Schools	86.8	37.9 ⁵
Girl Students	43.2	41.4 ⁶
Scheduled Caste Students	18.9	17.2 ⁶
Scheduled Tribe Students	5.8	7.1 ⁶
Women Teachers	28.0	38.8 ⁷
Trained Teachers	96.8	93.9 ⁷

The most glaring deviation was in the proportion of schools which had only a primary section. According to the information provided by the headmasters, 62% schools of the sample had either Classes I to VII/VIII or I to X/XII. It is likely that a large number of schools had been upgraded during the past five years.

1 The number planned.

2 The number for which data were retained for analyses.

3 Pupil data were retained for 366 schools but for non-availability of SQ or other problems data from 47 more schools were eliminated from descriptive statistics on school variables and between-school analyses.

4 In addition to this number, the test battery was also administered to 416 pupils of Class V.

Source

5 School Questionnaire

6 Pupil Questionnaire

7 Teacher Questionnaire

In most States, the percentages of girl, SC and ST pupils were somewhat higher than the 1986 statistics. The differences were explained as an expected change due to special attention being paid to improve the enrolment and attendance of the weaker sections.

In Andhra Pradesh, the percentage of students⁸ and the percentage of SC students were lower in the selected sample; it could be due to the lower rate of attendance of these pupils. The percentage of ST pupils was higher by 1.3%, the difference was in the expected direction. Women teachers increased by nearly 11%. A similar trend was seen in most States, more women opting for employment outside the home, and a greater drive to recruit women teachers in accordance with the National Policy of Education, 1986, could be responsible for the speeded change.

The 3% reduction in the number of trained teachers could be related to a planned drive to recruit more women teachers, if the requisite trained woman teachers were not available. On the whole, with the exception of a large number of primary sections being part of middle schools, the sample from Andhra Pradesh could be considered as fairly representative.

The Tests in Andhra Pradesh

Andhra Pradesh could not participate in the construction and try-out of the test material thus losing the advantage of contributing to the tests, particularly the ones in language, or improving on its translations in the light of the feedback available from the try-out data.

For translating the tests all States were requested to keep to the Hindi version while seeking help from the English translation. The opportunity for discussing and improving the translations was availed of by the State. The data regarding the difficulty levels of the tests are given below.

Table 1.3

DIFFICULTY VALUES OF THE ITEMS

Pass Percentage	Arith	R C (P)	R C (S)	W.K.	A W	S S	Spell-ings
0 - 9							
10 - 19			1				
20 - 29	1	2	5		1		
30 - 39	1	2	—		3	1	1
40 - 49	3	7	2		2	1	3
50 - 59	4	3	1	17	5	2	2
60 - 69	12	7	4	22	7	4	12
70 - 79	10	18	1	1	3	5	7
80 - 89	7	5	2		2	4	—
Median	2	—	—		1	1	—
	58.7	60.1	39.5	50.9	51.9	60.5	54.9

⁸ The average achievement of girl students was found to be slightly higher, but the shortfall in the expected sample being small its impact on the State average would not be very significant.

⁹ This percentage also included unspecified work.

Most tests proved easy in Andhra Pradesh, 66% of the items had a pass percentage of 50 and above, with the exception of one test, the median difficulty value of the items in all the tests were above 50%. The pass percentages of items in Word Knowledge varied within a very small range, the difficulty level of a test dependent on out-of-context words is most susceptible to change in translation. The median Discrimination Indices for the items in different tests varied between 49.5 to 93.6.

The Groups in the Study

The Pupils

The following observations are based on the responses of 4,691 pupils of Class IV on the Pupil Questionnaire. Sixty-one per cent of the pupils were from rural area, 41% were girls. The percentages for SC, ST, BC and others were 17.2, 7.1, 47.0 and 28.6, respectively. The average age of the pupils was 9.6 years.

Forty-one per cent of the children came from families where fathers were farmers; 24% of the fathers were unskilled workers, and another 3% unemployed⁹. Only 5% of the fathers were professionals or earning high salaries by other kind of employment. This percentage was somewhat smaller as compared to the other States. Thirty-seven per cent fathers and 61% mothers were illiterate, with another 35% fathers and 30% mothers having studied only up to the primary level, only 5.6% fathers and 0.5% mothers had gone to college. Twenty-six per cent of the children belonged to small families of one or two children, a nearly equal number came from large families.

Twenty-four per cent children had attended pre-school classes; 12% spoke a language other than Telugu at home. Less than 50% children reported having most of the textbooks, on the other side, 21% said they had only a few of them. The situation was worse regarding other study material such as notebooks, etc. Only 38% said they had most of what they needed, with 29% saying they had little. Approximately one third of all children helped the family with domestic or occupation-related work for two or more hours every day.

A small percentage of 17 had some place at home where they could sit and study, but help with homework was received by 43% of the children. Seventy-nine per cent children could attend school regularly, only 3.4% had to miss it frequently.

Newspapers and magazines were received in about 15% of the homes, 72% homes had no books (other than textbooks), with another 25% reporting less than 20 in all. But nearly 50% children said they read something

other than their textbooks. Thirty-one per cent children watched some television, varying between 1/2 hour to more than 2 hours every day.

On the whole, the primary school children in Andhra Pradesh were somewhat at a disadvantage as compared to some other States. More parents were illiterate or had studied only up to the primary level, more fathers had low-level jobs. Homes did not present an educationally rich environment. A fairly large percentage could not get all the textbooks or other study material. In brief, the family support system was weak.

The Teachers

Five hundred and twelve sets of responses to the questionnaire prepared to elicit information about the teachers teaching primary classes were received. Seventy per cent of the teachers were working in rural areas; 39% were women. The percentage of teachers belonging to age-group 35 and less was rather high—46%—suggesting a period of rapid expansion of primary education¹⁰ as well as provision of more teachers in primary schools. Corresponding to their age distribution, 35% teachers reported their total teaching experience to be less than 5 years.

The percentage of graduates teaching primary sections was rather high—33%, 8% teachers had not studied even upto Class X¹¹. Corresponding to this, 33% also reported having a B.Ed. degree, a teacher education programme addressed to teaching secondary classes. Another thirty-three per cent had been through a professional education for two years, and 28% had one year of training designed for primary school teachers. Six per cent teachers marked 'Any Other'; it is likely that they were untrained, the headmasters also reported a comparable percentage of untrained teachers¹². Fifty-six per cent teachers lived close to their schools needing only a half to one hour to travel to and from school, and only 6% lived at distant places.

Twenty-six per cent teachers did not have copies of textbooks, either their own or from the library, they borrowed them from the pupils, probably on the spot, sixty-two per cent had their own copies. A dictionary was also not available to 31%, either in school or at home.

A fairly large percentage (57.4) of teachers said they adopted new practices in teaching and that it resulted in better achievement and more interest on the part of the pupils¹³. Nearly an equal percentage (56.2) used study

material other than textbooks quite often, only 8% said they used it rarely. Twenty per cent teachers developed plenty of such material with another 72% reporting developing some of it; again, 8% teachers said they did not develop any material themselves. Sixty-eight per cent teachers involved their students also in this exercise. Monthly evaluation of pupils was fairly common in Andhra Pradesh, being practiced by 79% of the teachers, 5% said they examined pupils only once a year, the rest 16% adopted the more frequent practice of evaluating pupils 2-3 times a year. But the frequent evaluation was not used for varied purposes by as large a percentage as carried it out, with only 33% reporting multiple use of the information thus obtained. The majority of 66% used it for one purpose only—most likely for promotion. Most of the teachers said they helped weak pupils by paying special attention, only 5% asked the parents to arrange private tuition. Eleven per cent teachers did not check the homework done by pupils regularly. The classrooms of 79% teachers can be considered permissive as they reported pupils asking questions quite frequently.

The teachers in Andhra Pradesh were relatively young, with a limited experience of teaching. They had, on the average, studied for a longer period but their professional training was not the best. In-service education had been available to more than half the teachers. Quite a few of them developed some audio-visual material for use in their teaching, most of them evaluated their pupils regularly but fewer used the feedback to its full potential.

The Headmasters

The data with respect to the background of the headmasters and conditions in schools were summarised from 319 School Questionnaires filled in by the headmasters. As in the case of teachers, a fairly large percentage of headmasters (28%) were young, being less than 35 years of age. A total teaching experience of less than five years was reported by 20% of them but 60% had been teaching for more than 15 years. Forty-four per cent had been headmasters for less than five years¹⁴. The picture regarding their professional training was also somewhat similar to that of the teachers, with 3% being untrained and 29% having a B.Ed. degree; 40% had gone through a two-year course in preparation for teaching primary school teachers, and the rest had received one year of professional education.

10 This is also supported by 21% schools reporting having been in existence for less than 10 years.

11 The State Coordinator informed that these are the left-over from the earlier minimum required qualification of eight years of general education plus two years of training.

12 The State Coordinator confirmed that in the large-scale recruitment of 16,000 teachers to provide a second teacher in the single-teacher schools, some could be untrained.

13 This has been confirmed by the State: "Under the Andhra Pradesh Primary Education Project with assistance from the U.K., most of the teachers were trained in the activity approach and the child-centered approach. The PMOST programme, OB scheme contributed for the betterment of instruction in primary schools. The State is moving towards better quality of instruction/learning through modern approaches."

14 The State Coordinator elaborated: "Teachers with better qualification and those who possess the B.Ed. degree have been appointed as headmasters of primary schools (even) though they did not possess previous experience."

The Schools

Of the 319 schools the data from which have been used for the description that follows, 75% were in rural area. According to the Fifth All India Educational Survey, the proportion of primary schools in rural area was 90%¹⁵. Leaving some margin for change in the intervening five years, the proportion of urban schools in the sample was higher than expected. With the exception of one, all schools in Andhra Pradesh were co-educational. The percentage of private schools was on the high side being 5.6, another 9.1% were private aided. Nearly two-thirds of the schools were managed by local bodies. Half the schools in the sample were middle schools. The deviation of proportion of 35% primary (only) schools in this sample from the 1986 statistics of 87% has been commented upon earlier. Thirteen per cent of secondary/higher secondary schools was also very high when compared with the population statistics. About 21% of the schools were newly opened, having been in existence for less than 10 years.

Regarding physical facilities, 30% headmasters had a separate room as their office but the teachers' room was available in only 16% of the schools. The facility of drinking water was available in 54% of the schools; 20% had urinals for girls.¹⁶

Only 7% of the schools had pre-primary classes; a Book Bank existed in 18%. The situation regarding the 'No Detention' policy varied a great deal in the State -- 63% schools said they followed it up to Class IV, 17% up to Class I, and 19% detained students who did not achieve the expected levels, even at the end of Class I.¹⁷ The

latter percentage was higher than the combined number of private and private aided schools.

Seventy-four per cent headmasters said they had a Parent Teacher Association in their schools.

The Achievements of Pupils

The average achievements of 4,691 pupils of Class IV on all the seven tests in the battery are given in Table 1.4.

With the exception of the test in Reading Comprehension involving sentences, all mean scores were fairly high. The only other mean which was less than 50% was of Appropriate Word. The format of questions was the same in both the tests, namely, selecting a word for the blank space. In the test for Reading Comprehension the decision was on which word would make the sentence meaningful, and in the case of Appropriate Word, the word was to be selected out of near synonyms that would go with the general style or choice of other words of the sentence. The difficulty could be either with the format or the skill required in rejecting the (incorrect) alternatives.

The aggregate achievement was 53% which could be considered satisfactory.

All the States were requested to administer the test battery to a small sample of pupils from Class V from some of the schools in the sample. Andhra Pradesh collected data from 228 pupils of Class V. The difference was very startling. Pupils of Class V scored lower than those in Class IV in each of the 7 tests, resulting in a big difference in the aggregate. It was difficult to understand this.

Table 1.4

ACHIEVEMENTS OF PUPILS

Test	<i>Arith</i> (40) ¹⁸	<i>RC(P)</i> (44)	<i>RC(S)</i> (16)	<i>WK</i> (40)	<i>A W</i> (24)	<i>SS</i> (18)	<i>Spell</i> (25)	<i>Total</i> (207)
Mean	23.4	24.0	6.2	20.4	11.7	10.8	13.3	109.8
SD	8.5	9.2	2.7	14.6	4.5	4.2	7.3	
Mean as Percentage	58.5	54.5	38.7	51.0	48.7	60.0	53.2	53.0
KR-20	0.90	0.91	0.62	0.98	0.78	0.82	0.92	
All-India	41.2	45.4	43.1	49.5	41.7	57.8 ¹⁹	42.8 ¹⁹	45.2
Median as Percentage								

15 The mean achievement of children from rural or urban areas differed only to a small extent in favour of urban children.

16 These figures should be seen in the light of the percentage of secondary and middle schools in the sample.

17 The State Coordinator wrote: "In 1971 the State adopted the Non-Detention policy. According to the policy there is no detention at primary stage, i.e., up to Class V. There is external examination at the end of Classes VII and X. There are no detentions in other classes because of (internal) examination. But if a student does not have 80% of attendance, he/she can be detained, if there is no valid reason. As such, such detentions may be there in primary classes rarely."

18 The maximum possible score.

19 Tripura is excluded, the content of the tests was not common in all the States.

Table 1.5

ACHIEVEMENTS OF PUPILS — CLASSES IV AND V

<i>Class</i>	<i>Arith</i>	<i>RC(P)</i>	<i>RS(S)</i>	<i>WK</i>	<i>AW</i>	<i>SS</i>	<i>Spell</i>	<i>Total</i>
IV (4691)	23.4	24.0	6.2	20.4	11.7	10.8	13.3	109.8
V (228)	19.6	23.3	4.9	19.5	9.8	9.3	11.4	97.4

The achievements of students were also studied region-wise.

Table 1.6

ACHIEVEMENTS OF PUPILS — REGION-WISE

<i>Region</i>	<i>Arith</i>	<i>RC(P)</i>	<i>RS(S)</i>	<i>WK</i>	<i>AW</i>	<i>SS</i>	<i>Spell</i>	<i>Total</i>
Capital City (583)								
Mean	27.4	28.9	7.2	19.7	13.8	12.8	15.7	125.5
SD	7.5	8.0	2.3	15.3	4.2	3.4	6.5	
Rayala Seema (1645)								
Mean	22.3	20.0	5.7	21.4	11.1	10.4	12.5	104.3
SD	8.9	8.6	2.8	14.7	4.6	4.4	7.5	
Telangana (1097)								
Mean	25.2	27.1	6.7	19.7	12.6	10.9	14.7	116.9
SD	8.1	8.6	2.4	15.1	4.2	4.0	7.0	
Coastal Andhra (1366)								
Mean	21.6	23.2	6.0	20.0	10.8	10.3	12.1	104.0
SD	7.8	9.2	2.6	13.8	4.5	4.2	7.2	

The scores were highest in the capital city of Hyderabad, Telangana had the next highest overall average with Rayala Seema and coastal Andhra at the tail-end. Both these districts had the highest mean scores on Word Knowledge. While the high achieving regions contributed 86% and 85% of the expected sample of pupils, the same were 73%, and 92%, respectively, from Rayala Seema and coastal Andhra — the two regions with lower aggregate means. The overall mean thus was not considered as having been pulled in any particular direction.

The achievements of children on two tests, viz., Arithmetic and Reading Comprehension (paragraphs), were also studied objective-wise and, in the case of Arithmetic, topics-wise too.

Table 1.7

ACHIEVEMENT IN ARITHMETIC — OBJECTIVE-WISE

<i>Objective</i>	<i>Mean</i>	<i>SD</i>	<i>Mean as Percentage</i>
Knowledge (19) ²⁰	10.8	3.8	56.8
Understanding (12)	7.5	2.9	62.5
Application (9)	5.2	2.5	57.8
Total (40)	23.4	8.5	58.5

The results, once again were hard to explain. A higher percentage on 'Application' items in comparison to items involving knowledge only was difficult to comprehend.

²⁰ The maximum possible score

Comparable percentages of scores on 'Understanding' and 'Knowledge' were seen in some other States also but in Andhra Pradesh, the one on 'Understanding' was substantially higher than the one obtained for 'Knowledge'.

Table 1.8

ACHIEVEMENT IN ARITHMETIC — TOPIC-WISE

<i>Topic</i>	<i>Mean</i>	<i>SD</i>	<i>Mean as Percentage</i>
Time (3)	1.9	1.0	63.3
Factors and Multiples (7)	3.6	1.8	51.4
Fundamental Operations (12)	7.2	3.0	60.0
Weights and Measures (3)	1.5	0.8	50.0
Fractions (5)	2.8	1.5	56.0
Decimals (7)	4.1	1.7	58.6
Unitary method plus others (3)	2.2	0.9	73.3
Total (40)	23.4	8.5	58.5

The highest achievement in the unitary method was noted in other States as well. Probably the questions included were very similar to the ones given in the books. The percentage scores were also quite high on 'Time' and 'Fundamental Operations'. The minimum was on 'Weights and Measures', which is not far removed from the daily experiences of the children.

Table 1.9

ACHIEVEMENT IN READING COMPREHENSION—OBJECTIVE-WISE

<i>Objective</i>	<i>Mean</i>	<i>SD</i>	<i>Mean as Percentage</i>
Noting Details (17)	9.9	3.6	58.2
Simple Comprehension ²¹ (13)	7.7	3.5	59.2
Inference ²² (14)	6.4	3.0	45.7
Total (44)	24.0	9.2	54.5

A relatively low mean on items involving 'Inference' was expected. The young pupils are still learning the higher-level skills involved in comprehending the material they read. In most States the mean percentage on the second objective was found to be lower than on

'Noting Details', again in the expected direction. In Andhra Pradesh, it was a little higher.

Table 1.10

DIFFERENCES IN ACHIEVEMENTS -- LOCATION-WISE

<i>Test</i>	<i>Location</i>	<i>Mean</i>	<i>SD</i>	<i>t</i>
Arith	U	23.7	8.7	1.84
	R	23.2	8.1	
RC (P)	U	24.1	9.5	0.36
	R	24.0	8.9	
RC (S)	U	6.4	2.6	1.05"
	R	6.1	2.7	
W K	U	20.6	13.7	0.67
	R	20.4	15.2	
A W	U	11.9	4.7	2.20
	R	10.6	4.5	
S S	U	11.1	4.2	1.43'
	R	10.6	4.2	
Spelling	U	13.5	7.4	1.68
	R	13.2	7.3	
RC (Total)	U	30.5	11.5	1.03
	R	30.1	10.9	
T	U	36.5	14.0	2.72
	R	34.4	12.9	

Urban - 1,848, Rural - 2,843

p < .01, p < .05

Urban children had a small edge in all the tests but the differences were very small; three of these were statistically significant but not so from the point of teaching-learning. The differences may also be seen in the light of the information available in Table 1.6 wherein the capital city of Hyderabad had higher means on all the tests. Even if the sample contributed by Hyderabad was only 12.4%, the small differences in favour of urban children could be attributed to the higher achievements in this particular urban region only.

The picture of differences between boys and girls was somewhat similar to the one for the urban/rural divide. In three out of seven tests, the means were identical, in the remaining four, girls did slightly better than the boys. In absolute terms, the differences were not large although two of these four were statistically significant. The aggregate scores of boys and girls were 109.1 and 110.9, respectively.

21 This includes (a) deriving meaning of a difficult word from the context, and (b) relating things at a simple level.

22 This includes identifying the message or the central idea and the title of the passage.

Table 1.11

DIFFERENCES IN ACHIEVEMENT — GENDER-WISE

Test	Gender	Mean	SD	t
Arith	B	23.4	8.4	0.14
	G	23.4	8.7	
RC (P)	B	23.6	9.2	3.23
	G	24.5	9.1	
RC (S)	B	6.2	2.7	0.39
	G	6.2	2.7	
W K	B	20.4	14.5	0.02
	G	20.4	14.7	
A W	B	11.6	4.6	2.09
	G	11.9	4.5	
S.S	B	10.7	4.2	2.59
	G	11.0	4.2	
Spelling	B	13.2	7.3	1.34
	G	13.5	7.4	
RC (total)	B	29.9	11.1	2.76
	G	30.8	11.1	
T (5+6+7)	B	35.4	13.2	2.26
	G	36.4	13.5	

Boys - 2,747 Girls - 1,944
 $p < .01$, $p < .05$

Table 1.12

DIFFERENCES IN ACHIEVEMENT — CASTE-WISE

Test	Group	Mean	SD	t
Arith	SC	23.5	8.1	6.44*
	ST	21.5	8.0	
	BC	23.4	8.6	
	Others	23.8	8.6	
RC (P)	SC	24.1	8.8	7.53
	ST	22.0	9.5	
	BC	24.5	9.2	
	Others	23.7	9.2	
RC (S)	SC	6.2	2.5	11.37**
	ST	5.4	2.8	
	BC	6.3	2.7	
	Others	6.3	2.7	
W K	SC	18.3	14.9	10.95**
	ST	18.1	15.2	
	BC	21.2	14.4	
	Others	20.9	14.5	
A W	SC	11.8	4.6	12.5*
	ST	10.3	4.4	
	BC	11.7	4.6	
	Others	11.9	4.5	
S.S	SC	10.9	4.1	2.93*
	ST	10.2	4.5	
	BC	10.8	4.2	
	Others	10.9	4.2	
Spelling	SC	13.2	7.3	4.16**
	ST	12.2	7.5	
	BC	13.6	7.1	
	Others	13.1	7.6	
RC (Total)	SC	30.4	10.6	8.77**
	ST	27.4	11.5	
	BC	30.7	11.1	
	Others	30.1	11.2	

Test	Group	Mean	SD	F
T (5+6+7)	SC	35.9	13.2	6.86*
	ST	32.6	13.5	
	BC	36.2	13.2	
	Others	35.9	13.5	

SC - 811 ST - 331 BC - 2,206 Others - 1,343
 $p < .01$, * $p < .05$

That the four groups differed from each other on achievement was clear from all the F-ratios being significant at .01 level of confidence. Backward Classes and 'Others' were at the same level of achievement, their aggregate scores being 111.5 and 110.7, respectively. Scheduled Caste children were not very far behind these two groups with an aggregate mean of 108.1. The achievements of Scheduled Tribe children were lowest with a mean of 99.7 only. It may be noticed that the BC group formed 47% of the sample, followed by 29%, 17% and 7% of 'Others', SC and ST, respectively.

The pattern of differences was not strictly consistent over the tests.

Factors Related to Pupil Achievement

Personal data with respect to age, gender, caste, and the home background variables were regressed with scores on Reading Comprehension and Arithmetic, with a view to understand their impact on pupil achievement. Before this analysis, data on interrelated variables were combined to obtain composite scores on 'Home Background', 'Facilities for Learning' and 'Educational Environment at Home'. The composite scores were obtained by using appropriate weights for the several variables as would maximise the correlation between the derived scores and the criterion variable.

The regression coefficients for the variables entered in the three composite variables are given below.

Home Background

	RC	Arith.
Location	-0.03	-0.38
Father's Occupation	0.11	-0.10
Caste	0.04	0.06
Father's Education	0.49*	0.34
Mother's Education	-0.15	0.02
Number of Siblings	-0.16	-0.63*
R	0.06	0.09

* $p < .05$

'Father's Education' made the most difference to what the children achieved in school. 'Mother's Education' probably got subsumed by it. The number of siblings had a significant regression coefficient with Arithmetic as criterion variable. Although differences among the caste groups

were significant, they did not seem to be significantly independent of 'Father's Education' (1 between these two variables was 0.19)

Facilities for Achievement

	RC	Arith
Attended Pre-school	0.00	-0.07
Place for Study	-1.12	-0.05
Help in Homework	0.42	1.33
Availability of Textbooks	1.79	1.58
Availability of Study Material	0.18	-0.33
Helping Household	0.47	0.81
Regularity in Attendance	0.10	-0.47
R	0.15	0.18

* $p < 0.1$, $p < 0.05$

The two variables which consistently contributed towards differences in achievement were 'Availability of Textbooks' and 'Helping Household'. The latter can be interpreted as time available to the child to study. 'Regularity in Attendance' had probably become the other side of the coin of availability of time. In addition to these two variables, receiving help with homework made for differences in achievement in arithmetic. A significant regression coefficient for 'Place of Study' for achieve-

ment in Reading Comprehension only was difficult to explain.

Educational Environment at Home.

	RC	Arith
Get Newspaper	-0.25	0.08
Get Magazines	-0.60	-0.03
Books at Home	-0.82	-0.61
Reads Books	0.04	0.49
R	0.05	0.04

* $p < 0.1$, $p < 0.05$

Only 'Books at Home' showed some reliable influence on achievements of children. It could be partly representing, the financial status of the family. In general, the financial and educational status of the parents seem to contribute to differences in achievement. A significant regression coefficient on 'Reads Books' for achievement in arithmetic was again difficult to comprehend. It could reflect the studious nature of the child or the interest of the family in learning in general.

The three composite variable and five others were regressed with achievement in Reading Comprehension and Arithmetic separately.

Table 1.13(a)

CONTRIBUTION OF PUPIL-RELATED VARIABLES TO ACHIEVEMENT IN READING COMPREHENSION

Variable	R	R ²	Increment in R ²	F	r
Word Knowledge	0.1810	0.0328	0.0328	158.90	0.18
Facilities for Learning	0.2226	0.0496	0.0168	82.83	0.15
Time Watch TV	0.2354	0.0554	0.0059	29.09	0.09
Similar Language	0.2440	0.0595	0.0041	20.51	0.06
Age	0.2509	0.0630	0.0034	17.12	0.06
Educ. Environ	0.2547	0.0649	0.0019	9.62	0.05
Gender	0.2576	0.0663	0.0014	7.29	0.04
Home Background	0.2583	0.0667	0.0004	1.81	0.05

* $p < 0.1$

Table 1.13 (b)

CONTRIBUTION OF PUPIL-RELATED VARIABLES TO ACHIEVEMENT IN ARITHMETIC

Variable	R	R ²	Increment in R ²	F	r
Facilities for Learning	0.1430	0.0204	0.0204	98.91	0.14
Word Knowledge	0.1935	0.0371	0.0167	80.89	0.14
Time Watch TV	0.2050	0.0420	0.0049	24.30	0.08
Similar Language	0.2110	0.0445	0.0025	12.20	0.04
Age	0.2124	0.0451	0.0006	2.84	0.03
Home Background	0.2125	0.0451	0.0001	0.71	0.05
Educ. Environ	0.2126	0.0452	0.0000	0.22	0.01
Gender	0.2126	0.0452	0.0000	—	0.00

$p < 0.1$

The differences among pupils as related to the variables entered in Tables 1.13(a) and 1.13(b) were somewhat larger for Reading Comprehension than for Arithmetic. With the exception of 'Home Background', all variables made statistically significant, though small, contributions to variance in Reading Comprehension, fewer variables made significant contribution in analysis with Arithmetic as the criterion. Apart from individual differences represented by the score on Word Knowledge, the most important variable was 'Facilities for Achievement', followed by 'Time Spent Watching TV' and 'Similarity of Language'. In Andhra Pradesh, 31% of the children reported watching some television and 12% said they spoke some language other than Telugu in which the tests were used in the State. Watching television had a positive relationship with achievement; the financial status of the family could be an intervening variable.²³

In Tables 1.13(a) and 1.13(b), the impact of pupil related variables, both individual and home-associated, was studied. In Andhra Pradesh the percentage of variance explained by these variables remained very low. Either the homes were more homogeneous or the schools more influential, it was 6.7% in relation to Reading Comprehension and only 4.5% with reference to Arithmetic. If the facilities available and practices adopted were different from school to school, the average achievement of pupils would also differ for that reason. All the school-related variables on which data were obtained in this study, excluding those providing information about the teachers, were regressed with pupil achievement.

The mean achievements of schools differed from each other nearly as much as the scores of the pupils. The standard deviation between school means (N=310) was 7.3 as compared to 8.5 for pupils in the test in Arithmetic.

Table 1.14 (a)

CONTRIBUTION OF SCHOOL-RELATED VARIABLES TO ACHIEVEMENT IN READING COMPREHENSION

Variable	R	R ²	Increment in R ²	F	r
Admin. of School	0.2379	0.0566	0.0566	18.48**	0.24
No Detention Policy	0.2905	0.0844	0.0278	9.33**	-0.19
Operation Blackboard	0.3315	0.1099	0.0255	8.76**	0.15
Years of Existence of School	0.3606	0.1301	0.0202	7.09**	0.12
Proportion SC/ST	0.3791	0.1437	0.0136	4.83*	-0.08
Books in the Library	0.3928	0.1543	0.0106	3.82	0.20
Age of the Pupil	0.4072	0.1658	0.0115	4.15*	0.10
Location of School	0.4121	0.1774	0.0116	4.25*	-0.03
Rooms per Class Group	0.4323	0.1869	0.0095	3.53	0.16
P.T.A.	0.4435	0.1967	0.0098	3.63	0.12
Teachers per Class Group	0.4501	0.2026	0.0059	2.20	0.02
Age of the Headmaster	0.4565	0.2084	0.0058	2.17	0.07
Separate Room for the Headmaster	0.4608	0.2123	0.0039	1.48	0.12

**p < 0.01, * p < 0.05

Table 1.14 (b)

CONTRIBUTION OF SCHOOL-RELATED VARIABLES TO ACHIEVEMENT IN ARITHMETIC

Variable	R	R ²	Increment in R ²	F	r
Operation Blackboard	0.2211	0.0489	0.0489	15.85**	0.22
Admin. of School	0.2805	0.0787	0.0298	9.92**	0.17
P.T.A.	0.3089	0.0954	0.0167	5.65*	0.16
No Detention Policy	0.3348	0.1121	0.0167	5.73*	-0.14
Rooms Per Class Group	0.3562	0.1269	0.0148	5.17*	0.14
Teachers Untrained	0.3773	0.1424	0.0155	5.47*	-0.13
Time given (Arith)	0.3896	0.1518	0.0094	3.35	-0.12
Total Enrollment	0.3989	0.1591	0.0073	2.60	-0.08
Age of the Pupil	0.4080	0.1665	0.0074	2.66	0.02

**p < 0.01, * p < 0.05

²³ The measure of financial status was not obtained

In the two tables given on page 63, most of the variables which did not contribute statistically significant increment to R^2 were omitted.²⁴ The total contribution to R^2 was 23% in the case of Reading Comprehension and 20% in Arithmetic. Two things were immediately noticeable. The differences attributable to school-related variables were three to four times as high when compared to R^2 in Tables 1 13(a) and 1 13(b). Secondly, the gap between variance related to the two criteria also narrowed. With respect to the pupil-related variables R^2 for Arithmetic was 67% of R^2 for Reading Comprehension while for differences in school it was 87% as much. It was hypothesised that achievement in arithmetic would be more dependent on learning in school. Keeping in mind the consistency of the statistical significance of the contribution of an independent variable to R^2 in relation to both the criterion variables, 'Administration of School', 'No-Detention Policy', 'Operation Blackboard' and 'Availability of Classrooms' turned out to be the most significant variables. In addition, 'Number of Years a School Had Been in Existence', 'Proportion of SC/ST Pupils' (in the school) and 'Number of Books in the Library' were found to be significant contributors to variance in language, and 'Parent Teacher Association' and 'Proportion of Untrained Teachers' made a difference to the mean achievements of schools in arithmetic.

In Andhra Pradesh, 21% schools in the sample were administered by the State government, 65% by local bodies and 15% were private or private aided. Positive 'r's suggest better performance of private/private-aided schools—a phenomenon quite common in most States. The 'No-Detention Policy' being adopted by schools could also be related to difference in administration but there obviously was not a complete overlap as there was a significant independent contribution to R^2 by this variable. It may also be mentioned that responses from headmasters on 'No Detention Policy' from all over the

country were not strictly according to the laid down policies of the respective States. Several head-teachers probably chose to exercise freedom on this aspect of administration, explicitly or covertly.

Under 'Operation Blackboard', the schools gained in material resources as well as number of teachers. The State data showed 0.9 teachers per class section; one or more teachers per class group were likely to obtain better results. The scheme had not been extended to 56% of the schools till 1991; it could both enthuse the teachers as well as contribute to availability of material help. A separate space for a class group also turned out to be a significant variable. On the average, only 3 rooms, including verandas, were available for 4 class groups in the State. Sixty-two per cent of the schools in the sample were primary sections of middle or secondary schools which could have more space on the average. The mean achievements of the primary sections of the three types of schools were not consistent in direction, the average score of pupils of primary (only) schools was higher than that of middle schools which was lower than the secondary or senior secondary schools. The availability of space was probably different for schools regardless of their status as primary, middle or secondary.

'Proportion of SC/ST Pupils' and 'Number of Books in the Library' might reflect the opportunities to pick up language skills at home and from the facilities available in school.²⁵

On the other hand, the proportion of untrained teachers seemed to affect achievement in arithmetic. It was difficult to say whether professional education *per se* was related to achievement, but other unknown (and not very desirable) variables might become operative in the recruitment of these teachers. Parent Teacher Associations had a positive correlation with average school achievement.

²⁴ Only those variables where 'F' was larger than 2.00 were retained in these tables.

²⁵ The average number of books in the library was 206, but the variation could be high.

Table 1-A

INTER CORRELATIONS OF PUPIL-RELATED VARIABLES AND ACHIEVEMENT

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	
1	100	-09	-09	-14	-03	07	-16	-23	-14	-10	-05	-10	03	-06	.04	01	-22	-19	-14	-06	-42	-03	-01	-05	-01	-03	-05	-03	-02	-23	02	15
2	100	-01	09	-05	04	.01	-05	-04	12	-05	-06	-02	-04	-10	-04	01	00	-02	-02	03	03	07	02	01	06	-00	01	06	-02	-03	03	
3	100	-01	08	02	-00	08	04	00	-04	01	-03	-01	-03	02	02	-02	01	-01	06	00	05	01	00	03	04	02	04	06	-02	-01		
4	100	-24	03	-08	-23	-17	05	-10	-13	-04	-04	-01	-02	-09	-09	-08	-05	-01	-03	-00	02	00	01	-02	-02	00	04	-03	08			
5	100	-03	09	19	17	-07	03	12	04	05	01	06	06	05	10	08	08	03	00	03	07	03	01	01	01	15	05	-08				
6	100	-04	-04	-02	-05	02	02	-05	02	12	02	-00	-06	-03	-01	-07	04	05	01	-06	03	-02	06	-04	-03	02						
7	100	17	15	04	10	12	04	01	-08	-00	15	18	17	07	16	.01	00	00	-00	01	-04	-02	00	11	01	-17						
8	100	.50	-06	11	23	09	10	04	05	22	21	25	12	31	07	05	06	11	07	08	14	05	77	09	-25							
9	100	-07	11	16	05	09	-01	04	17	20	24	13	21	04	01	04	09	05	07	09	.02	26	04	-23								
10	100	.01	-02	-02	02	-17	-04	.02	-03	06	02	04	-06	-01	-03	-06	-01	-06	-04	-01	-17	-05	-02									
11	100	31	03	12	-03	-00	23	21	17	13	10	02	-02	-05	-01	-02	06	01	-03	06	-19	-19										
12	100	10	14	01	05	17	19	16	09	10	09	03	-01	00	03	07	05	02	15	15	-18											
13	100	51	.11	.08	01	03	03	11	03	14	14	11	07	09	12	12	13	06	92	-03												
14	100	11	07	08	07	12	15	09	06	09	04	07	04	06	05	08	07	53	-10													
15	100	06	-04	-06	-08	-02	-06	08	04	05	10	03	05	04	05	04	30	05														
16	100	-04	01	01	03	01	-01	01	04	01	02	04	05	02	05	13	00															
17	100	35	27	.16	23	-00	-03	-01	02	01	05	01	-03	15	-03	-38																
18	100	28	17	19	-01	-04	-02	01	01	06	02	-03	14	-01	-49																	
19	100	26	21	-03	-05	-04	03	01	02	02	-05	16	-01	-72																		
20	100	16	02	-02	03	04	04	06	03	-01	07	08	-21																			
21	100	08	08	08	05	08	09	09	09	25	02	-20																				
22	100	58	46	14	50	52	47	59	05	14	01																					
23	100	.65	17	52	52	48	98	04	14	05																						
24	100	17	45	46	37	78	07	.12	04																							
25	100	.18	18	23	18	11	09	-01																								
26	100	56	45	54	06	09	-00																									
27	100	57	54	07	11	-03																										
28	100	49	10	11	-03																											
29	100	05	.15	05																												
30	100	19	18																													
31	100	14																														
32	100																															

Table 1-B

INTER CORRELATIONS OF SCHOOL-RELATED VARIABLES AND ACHIEVEMENT

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
100	42	41	26	11	-14	07	-21	26	28	01	-06	04	04	-21	-11	-10	-18	03	-01	-03	-15	-01	-02	-09	-03	-12	-13	08	05	-04	02	03	06	-03	10	09	-01	04
100	76	48	-09	-23	00	-25	01	54	07	19	08	08	-24	04	-03	-01	-01	-03	08	-10	06	-13	-12	-11	-14	-16	13	-03	-06	06	07	08	-02	18	09	03	07	
100	58	-05	-19	03	-27	-05	65	68	19	-03	14	-31	01	04	-01	-03	-4	04	-13	04	-18	-14	-10	-17	-17	10	-04	-03	03	08	07	01	11	07	-00	08		
100	-05	-07	-00	-14	-09	39	06	07	04	04	-17	-04	-00	02	-06	07	01	-05	00	-10	-07	-04	-09	-10	11	-02	-02	04	04	01	01	01	01	01	01	04		
100	-3	10	-29	28	-01	-13	-51	21	-04	01	-21	-31	-36	-28	-32	-15	-34	-00	14	-27	01	-21	-25	02	16	-06	-01	-03	-03	-01	-06	-03	-06	-03				
100	08	48	-16	-17	10	13	-07	-12	-10	10	28	38	33	42	16	41	-09	-10	32	16	15	19	-04	10	-08	17	23	21	12	15	17	22	24					
100	02	11	-03	-02	-21	03	06	02	-01	-02	-09	-10	-10	-13	03	04	-05	-06	-06	03	03	05	10	04	05	-00	01	-00	07	05	01	00						
100	-16	-27	09	06	-08	-16	19	05	09	27	22	24	02	37	-01	-03	29	08	14	19	-02	10	14	00	07	04	10	07	01	10	07							
100	-05	-09	-16	21	-08	-02	-20	-18	-28	-13	-01	-03	-15	03	06	-11	06	-04	-08	16	08	-06	08	-03	02	01	-01	13	-09	-02								
100	16	20	03	16	-30	04	00	-03	-00	-03	06	-15	00	-20	-12	-11	-19	-19	11	-00	-07	05	11	12	07	17	12	11	12									
100	05	03	06	-10	08	10	09	11	07	05	12	-03	-06	07	-01	-01	-01	07	-06	07	10	08	08	02	05	02	-02	08										
100	-21	10	-03	17	16	31	14	07	04	10	07	-16	11	-01	02	04	-07	-10	02	-08	01	-03	01	03	-04	-06	0											
100	-15	-01	-10	-11	-17	-06	06	-19	-14	-16	-09	-01	-08	-20	10	08	-11	-15	-10	02	12	03	03	11	01	05	10											
100	14	10	-04	-07	-15	-07	02	-09	28	-00	07	01	02	-08	-01	17	-13	-10	-12	-01	-16	-14	-09	-11														
100	45	18	02	08	25	11	03	-10	04	-13	-01	01	-01	-05	06	01	03	-01	-08	-02	02	01	02															
100	28	09	17	18	26	-05	-07	08	-00	-02	-00	-06	-10	02	14	17	11	05	17	11	13	16																
100	27	24	14	36	-01	-18	24	05	15	19	-09	-07	03	06	12	10	06	13	09	12	12																	
100	34	10	27	03	03	21	08	15	18	-10	-03	-04	00	05	02	04	02	-02	05	04																		
100	28	29	-03	-11	21	18	11	12	17	01	02	10	06	10	12	09	20	17	07																			
100	17	-05	-15	10	07	01	04	31	13	-00	18	18	22	11	12	26	24	20																				
100	-01	-01	-01	27	18	18	22	01	11	08	07	09	14	10	06	08	13	10																				
100	-05	-08	-05	-05	-07	02	-01	06	-14	-20	-12	-14	-09	-17	-12	-19																						
100	14	03	07	06	-06	-06	22	-08	-02	-06	-01	-00	-05	-09	-03																							
100	09	17	21	-03	05	02	06	06	-04	04	06	12	06																									
100	-01	-02	14	15	06	06	07	12	02	03	06	10	08																									
100	96	-16	-17	-09	-13	-03	-07	06	02	-01	04	-04																										
100	-12	-16	-07	-12	-02	-05	07	01	-01	05	-03																											
100	07	18	22	12	21	10	13	28	18	15																												
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Arunachal Pradesh

Arunachal Pradesh was requested to administer tests to approximately 1,000 children to be selected from 88 schools. The State returned data for 935 pupils from 92 schools. Ten schools from the original list were replaced by a comparable number from the additional list provided. Tests could not be conducted in two schools, in one Classes IV and V had been shifted to other schools, and in the second, the only student had dropped out.

The State was divided into two regions in addition to the capital city of Itanagar.

Table 2.1

SAMPLE PLANNED AND ENTERED IN ANALYSES

Region	Schools		Pupils
Itanagar	5 ¹	5 ²	125
Thap District	41	41	387
East Siang District	42	46	442
Total	88	92	935

Ninety-eight per cent of pupil data were available from nearly 102% of schools. The State had the distinction of covering a very high percentage of the sample of pupils. However, the balance over the regions was not maintained. As the deviations in the number of schools planned and approached were much smaller than those for the pupils, this seemed more due to improvement in enrolment or higher rate of attendance in some regions³. It may be recalled that number of pupils in each region were decided according to the enrolment ratios. In addition to enrolment, the percentage of children attending school may also be different in the regions.

1 The numbers planned

2 The numbers entered in analyses. There was confusion in the placement of region-code in some cases. The number of schools and students have been worked out within this limitation; there could be some inadvertent shifting from one region to another.

3 The State Coordinator confirmed: "Besides differences in enrolment, there are more children attending school in East Siang district than in Thap. Itanagar has very small number of schools."

Source

4 School Questionnaire

5 Pupil Questionnaire

6 Teacher Questionnaire

7 The State Coordinator informed: "Recruitment of Scheduled Tribe teachers", who were untrained, lowered the percentage of trained teachers.

The representativeness of this sample was checked by comparing some of the statistics obtained with those reported in the 1986 survey.

Table 2.2

SAMPLE AS COMPARED TO THE POPULATION

Variable	1986 Survey	Sample of the Study
Primary (only) Schools	79.4	72.1 ¹
Girl Students	40.3	47.3 ²
Scheduled Caste Students	0.8	1.6 ³
Scheduled Tribe Students	74.4	74.2 ³
Women Teachers	17.3	22.3 ⁶
Trained Teachers	42.9	38.1 ¹

There were small deviations between the statistics as available from the two sources. But none of these were such as could not have taken place during the 5-6 year interval. More primary schools could have been upgraded, reducing their proportion in 1991. The increase in the percentage of girls and Scheduled Caste students was in the expected direction as persistent efforts are made to recruit and retain more children of the socially disadvantaged groups in the schools. The increase in the number of women teachers was also in the expected direction, particularly in the light of recommendations of the National Policy of Education, 1986.

The number of trained teachers had decreased by more than 4%. This could be related to efforts to recruit more women teachers.⁷

The Tests in the State

The State used the tests in English. The original tests were developed in Hindi, English translations were pre-

pared to assist the States that needed to translate them in their own languages. They were advised to use both Hindi and English versions while translating the tests.⁸ The three States that were using English as the medium of instruction and had to test the children in English were requested to modify the English translations supplied from Delhi wherever considered necessary.

Arunachal Pradesh also participated in the try-out of the test material.

Table 2.3

PASS DIFFICULTY VALUES OF ITEMS

Pass Percentage	Arith	RC(P)	RC(S)	WK	A W	SS	Spell
10 - 19	3	1	2		5	—	—
20 - 29	8	7	4	—	5	—	3
30 - 39	13	17	5	19	3	3	8
40 - 49	10	9	3	18	7	5	9
50 - 59	1	10	2	3	2	9	3
60 - 69	1	—	—	—	2	1	2
70 - 79	3	—	—	—	—	—	—
80 - 89	1	—	—	—	—	—	—
Median	36.5	37.7	33.5	40.1	36.2	50.6	41.2

The tests proved quite difficult for Arunachal Pradesh. Less than one-fifth of all items had pass percentages higher than 50, only 5% items were marked correctly by 60% or more pupils. With the exception of the test on Sentence Structure, the median facility values varied between 33% to 41%. 'Sentence Structure' and 'Spelling' were constructed by the State itself, these could get more easily adjusted to the level of achievements of pupils in the State.

The Groups in the Study

The Pupils

Data from 935 pupils were studied. Of these 82% were from rural areas and 47% were girls. As per the 1986 statistics, 91% of the pupils in Class IV were enrolled in rural areas, their proportion in the sample was substantially lower. The attendance was likely to be lower in the rural areas. The difference between enrolment and attendance in the States that are sparsely populated and have a difficult terrain could be higher than in the other States. The average score of the rural group was some-

what higher, being 83.3 as against 80.3 of the urban group. It was difficult to say whether a smaller proportion of rural children in the sample had made some difference to the State statistics.

The percentage of girls in the sample was higher as compared to the enrolment ratio of 40% in 1986. As mentioned earlier, this change could be real. The average aggregate score of the girls was slightly lower than that of the boys. The State had a predominance of Scheduled Tribe children (74%) followed by 'Others' (21%), Backward Classes (3%), and a negligible group (1.6%) of Scheduled Caste children. Their average age of 11.3 years was lower only to that of Sikkim.

Fifty per cent fathers and 71% mothers in Arunachal Pradesh were illiterate, another 23% fathers and 13% mothers had studied only up to primary level. Seven per cent fathers and 3% mothers had gone to college. Nearly 60% children came from families where the fathers were farmers; 7% were unskilled workers or were unemployed. On the other hand 16% fathers were either professionals or had high salaried jobs. Only 17% children came from small family of one or two children.

English being the medium of instruction in Arunachal Pradesh, 95% children reported the language spoken at home to be different from the language through which they were being taught in school. A fairly large percentage 31.4% had received some pre-school education. Eighty-five per cent children reported having most of the textbooks, 2% said they had only a few of them, 68% were satisfied about availability of other study material. Eighty per cent children could attend school regularly, only 2.4% had to remain absent frequently. Help in homework was received by 37.5% children and 45% said they had a place at home where they could sit and study. But 44% spent two or more hours every day helping their families with domestic or job-related work.

The newspaper was received in 21% families and magazines in 29%. Forty-three per cent homes had some books, including 3% who had many. Half the children said they read something other than their textbooks, at least sometimes⁹. Thirty-three per cent children watched some TV every day.

The biggest handicap of children from Arunachal Pradesh was their schooling through a language they did not speak at home. As most of the group belonged to the Scheduled Tribes, it was probably no special handicap. They had textbooks and also other study material. Availability of books at home was not scarce.

⁸ Most States could consult the Hindi version with care, several used more of the Hindi version than the English one.

⁹ The State Coordinator explained that "the children read Hindi books besides the English ones — Hindi being the second language."

The Teachers

One hundred and ninety-three teachers responded to the questionnaire meant for eliciting information about their background, the practices they followed, etc. Eighty-five per cent of them were working in the rural areas and 22% were women. Most of them were quite young, 62% being less than 35 years of age, a small 4% were older than 50 years. Corresponding to their age, their teaching experience was also limited, 35% had taught for less than 5 years, only 39% had been teaching for 10 or more years.

The percentage of graduates in the group was a high 70%¹⁰, comparable to that in Delhi. Four per cent teachers were non-matriculants. Corresponding to the number of graduates, more than 41% teachers also had a B Ed degree, 43% teachers had received professional education, most of them for one year, suitable for teaching primary classes. Twelve per cent opted for the alternative 'Any Other' which would include 'Untrained' as well. According to the information supplied by the headmasters, 62% teachers in primary sections were untrained. The disparity between the statistics regarding the training of teachers as reported by the headmasters and the teachers themselves could be due to biased sub-sampling of teachers in schools. If, instead of random sampling from amongst the teachers the questionnaire was given to the best or the seniormost or the one who would offer to fill it more readily, biases would accrue¹¹. Nearly half of all the teachers had received some in-service education.

Thirty-five per cent of the teachers in this group were freshly recruited as their total teaching experience was less than five years; 19% had taught for more than 20 years.

Three-fourths of the teachers seemed to reside close to their schools as they needed very little time to travel, only 7% travelled for two or more hours every day to and from their place of work.

Eighty-two per cent teachers kept to the known traditional practices of teaching, though 95% felt that some innovations would ensure greater interest and achievement on the part of the pupils. Only 33% teachers frequently used study material other than textbooks in their teaching. Twenty-eight per cent said they had prepared plenty of audio-visual aids for use in their classes and a large number had involved even their pupils in this exercise.

Fifty-eight per cent teachers evaluated the progress of the pupils every month; with the exception of three

teachers, the rest did it 2-3 times a year. But the feedback available from frequent evaluations was not used fully by all those who conducted them. Only 18% used it for identifying shortcomings in teaching-learning, one-third of the teachers used evaluation for deciding promotion only. The majority of 86% teachers corrected pupils' homework regularly, the rest did it sometimes. Eighty-eight per cent teachers helped weak students by paying special attention to them but 12% asked the parents to arrange private tuition. Only 38% teachers reported that pupils asked questions in the class.¹²

Forty-six per cent teachers had their own copies of the textbooks, 34% had library copies but the rest 20% borrowed them from the pupils. Eight per cent teachers had no access to an English language dictionary, though 72% had their own copies.

The teachers in Arunachal Pradesh were relatively young, a very large percentage were graduates and had a B Ed degree as part of their professional training. The facility of in-service education in the State was reasonable. Textbooks and a dictionary were available to most of them; pupil evaluation was conducted frequently but full use was not made of the same.

The Headmasters

Thirty-eight per cent¹³ of the headmasters were untrained; 27% had a B Ed degree. Of the remaining 35%, the majority had a one-year training meant for primary school teachers. Forty per cent headmasters could be considered young, being less than 35 years of age but only 17% of the total group had taught for less than five years. Forty-five per cent had been headmasters for less than five years.

The headmasters were relatively young and inexperienced. More of them were graduates.

The Schools

Ninety-two per cent of the schools in the sample were located in rural areas. With the exception of five schools, all were being run by the State or the Central government. Of the five, two schools were private aided and three were being managed by local bodies. There were no private schools in the sample.

Seventy-two per cent of the schools were primary (only) and 15% middle; the remaining 13% had Classes 1 to X/XII. Pre-primary sections were attached to 21% of the schools. Nearly all schools were co-educational.

10 Twenty-eight per cent of the schools were either middle or secondary schools. This could have also contributed to the high percentage of graduates as primary school teachers.

11 The State Coordinator confirmed this bias. The picture regarding 'All Teachers' becomes coloured in such a case.

12 English being the medium of instruction, children could find it difficult to ask questions.

13 As per data available from 86 respondents.

Forty-two per cent of the schools had a room for the headmaster as also for the teachers. Seventy per cent schools provided drinking water for the children, urinals for girls were available in 34% of them. Twenty-one per cent schools had Book Banks and the average number of books in the schools was a high¹⁴ 465. Less than half the schools had benefited from Operation Blackboard.

The 'No Detention Policy' was not being followed by 65% of the schools. Another 15% schools did not respond to this question; they could also be detaining pupils who did not achieve a predetermined level of learning of the school curriculum. Half of the rest of the 20% schools said they did not detain children up to Class II, 6% school kept promoting children up to Class IV regardless of what they could not learn.

A.PTA existed in more than one-third of the schools.

The level of facilities in school were moderate. Children were not promoted to the next class automatically.

The Achievements of Pupils

The achievements of pupils in all the seven tests are given in Table 2.4.

Low scores in tests of Reading Comprehension (sentences) and Appropriate Word had been noticed in some other States as well. Both the tests had the same item type, namely, to select the correct word for the space left blank in a sentence. (The basis of selection was

different in the two tests.) Although this format is used frequently in the end-of-the-lesson exercises in the textbooks, the tests proved difficult. The easiest was the one on the structure of a sentence, followed by spellings. Both these were constructed by the State centres themselves, the same could have got adjusted better to the level of achievement of children in the State.

All States were advised to test a small sample of children of Class V from some of the schools selected in this study. Each State was to identify at least 10 schools which would comprise a mini-sample from the bigger one, on the basis of their judgement only. Arunachal Pradesh reported to have tested 88 children studying in Class V. Due to errors in coding, only 51 children could be identified.

The mean achievement of pupils of Class V was slightly lower in six out of seven tests, in spellings, the two means were exactly the same. The differences, though unfavourable to Class V, were very small. The data of the two groups were merged together.

Each State was divided into several regions in the first step towards drawing a sample of schools. It would ensure proper representation of all parts of the State as also provide useful data with respect to regional differences, if any. The capital city of every State was included as a region. The rest of Arunachal Pradesh was divided into two parts from which the districts of Tirap and East Siang were selected respectively.

Table 2.4

ACHIEVEMENTS OF PUPILS

Test	Arith (40) ¹⁵	RC(P) (44)	RC(S) (16)	WK (40)	A W (24)	SS (18)	Spell (25)	Total (207)
Mean	15.4	17.3	5.6	16.4	8.8	8.8	10.5	82.8
SD	6.1	8.4	3.2	8.9	3.6	4.4	5.9	
Mean as Percentage	38.5	39.3	35.0	41.0	36.7	48.9	42.0	40.0
KIR-20	0.79	0.88	0.71	0.90	0.65	0.82	0.84	
All India Median as Percentage	41.2	45.4	43.1	49.5	41.7	57.8 ¹⁶	42.8 ¹⁶	45.2

Table 2.5

MEAN ACHIEVEMENTS OF PUPILS — CLASSES IV AND V

Class	Arith	RC(P)	RC(S)	WK	A W	SS	Spell	Total
IV (884)	15.4	17.3	5.6	16.1	8.8	8.8	10.5	82.8
V (51)	15.4	17.0	5.5	16.0	8.6	8.2	10.5	81.2

¹⁴ As compared to other States.

¹⁵ The maximum possible score.

¹⁶ Tripura is excluded. The context of the tests was not common in all States.

Table 2.6

ACHIEVEMENTS OF PUPILS — REGION-WISE

Region	Arith	RC(P)	RC(S)	W K	A W	S S	Spell	Total
Itanagar (88)	16.3	17.6	5.4	14.3	9.6	9.7	10.3	83.2
Tinap (307)	15.4	18.7	6.4	19.8	9.3	9.5	11.0	90.1
East Siang (540)	15.3	16.5	5.2	14.8	8.1	6.3	10.2	76.7

There were noticeable differences in the three regions. East Siang was the poorest,¹⁷ and Tinap, the best scoring, higher than the capital city of Itanagar. The children of the capital city in many States had lower averages than children in other parts of the State. It was likely that the higher socio-economic groups sent their children to high-fee-charging private schools. In most States, English medium had been the main attraction. In Arunachal Pradesh, English was the medium of instruction in all schools anyway. May be, the facilities and the quality of the teachers differed in private schools, weaning away the high socio-economic group which would be more motivated and could even be better in ability.

The achievement of children on two tests, namely, Arithmetic and Reading Comprehension (paragraphs), were studied objective-wise, and in the case of Arithmetic, topic-wise also.

Table 2.7

ACHIEVEMENT IN ARITHMETIC — OBJECTIVE-WISE

Objective	Mean	SD	Mean as percentage
Knowledge (19) ¹⁸	8.1	3.2	42.6
Understanding (12)	4.6	2.2	38.3
Application (9)	2.7	1.8	30.0
Total (40)	15.4	6.1	38.5

The mean scores were in descending order as was expected. Application items would prove more difficult for the young children than the items on Knowledge. In general, the achievements were low.

The highest proportionate score in the last topic had been seen in other States as well. There could be many reasons for this picture. The three items could be particularly easy, it was also suspected that this topic (rather method) was taught by application of rules clearly by the teachers. The questions were very similar to the ones

given in the books. The next high percentages were for Decimals and Time which could be due to 'recency' as these topics, in most States were introduced in Class IV only.

Table 2.8

ACHIEVEMENT IN ARITHMETIC — TOPIC-WISE

Topic	Mean	SD	Mean as Percentage
Time (3)	1.2	1.0	40.0
Factors and Multiples (7)	2.2	1.4	31.4
Fundamental Operations (12)	4.4	2.2	36.7
Weights and Measures (3)	1.0	0.9	33.3
Fractions (5)	1.6	1.1	32.0
Decimals (7)	3.4	1.6	48.6
Unitary method plus Others (3)	1.7	0.9	56.7
Total (40)	15.4	6.1	38.5

Table 2.9ACHIEVEMENT IN READING COMPREHENSION
OBJECTIVE - WISE

Objective	Mean	SD	Mean as percentage
Noting Detail (17)	8.0	3.9	47.1
Simple Comprehension ¹⁹ (13)	5.0	3.3	38.5
Inference ²⁰ (14)	4.2	2.4	30.0
Total (44)	17.3	8.4	39.3

As in the case of arithmetic, the mean scores on the three objectives were in accordance with the complexity of the tasks required. 'Drawing Inference' is a higher-level skill which was probably still being learnt. Considering that the young children learnt a language other than their mother tongue, the achievements were not considered low.

17 The proportion of sample of pupils selected from this district was higher than planned, this tended to pull down the State average to some extent.

18 The maximum possible score

19 This included (a) deriving meanings of difficult words from the context, and (b) relating things at a simple level.

20 This includes identifying the message or the central idea and the title of the write-up

The differences in the achievements of pupils when divided over location, gender and caste were also studied. The relevant details are presented in the tables below.

Table 2.10

DIFFERENCES IN ACHIEVEMENT — LOCATION-WISE

Test	Location	Mean	SD	t
Arith	U	15.2	5.8	0.59
	R	15.3	6.2	
RC (P)	U	16.4	7.7	1.53
	R	17.5	8.6	
RC (S)	U	5.3	3.0	1.36
	R	5.7	3.2	
W.K.	U	15.1	9.2	2.17
	R	16.7	8.8	
A.W.	U	9.2	3.4	1.58
	R	8.7	3.7	
S.S.	U	8.8	4.6	0.12
	R	8.8	4.4	
Spelling	U	10.3	6.2	0.58
	R	10.6	5.8	
RC (total)	U	21.7	9.7	1.62
	R	23.2	10.8	
T (5 + 6 + 7)	U	28.3	11.3	0.16
	R	28.1	11.0	

Urban - 169, Rural - 766

* $p < .05$

Except for tests of Reading Comprehension (para) and Word Knowledge, on which rural children had higher mean scores, there were no differences between rural and urban children. Only one of these differences was statistically significant. As the direction of the five out of seven differences remained the same, the scores added to 83.3 for rural children as compared to 80.3 for the urban. Various factors could be responsible for this situation. Children from the higher socio-economic groups could be going to private fee-charging schools, teachers in rural areas may be more dedicated workers, and both teachers and pupils may have fewer distractions in rural areas.

Table 2.11

DIFFERENCES IN ACHIEVEMENT — GENDER-WISE

Test	Gender	Mean	SD	t
Arith	B	15.9	6.2	2.25*
	G	15.0	5.9	
RC (P)	B	17.1	8.2	0.46
	G	17.4	8.6	
RC (S)	B	5.7	3.2	0.87
	G	5.5	3.2	
W.K.	B	17.4	8.3	3.64
	G	15.3	9.4	
A.W.	B	8.7	3.6	1.01
	G	8.9	3.7	
S.S.	B	8.8	4.4	0.13
	G	8.8	4.4	
Spelling	B	10.3	5.9	0.99
	G	10.7	5.9	

Test	Gender	Mean	SD	t
RC (total)	B	22.9	10.4	0.11
	G	22.9	10.9	
T (5 + 6 + 7)	B	27.8	11.1	0.91
	G	28.3	11.0	

Boys - 493, Girls - 442

* $p < .01$, $p < .05$

On the boy/girl divide, the situation was somewhat similar to the distribution of the group as living in urban or rural areas. Boys did better than the girls on the tests in Arithmetic (the difference was less than 1 score) and Word Knowledge. This helped them to maintain their lead of 83.9 scores as against 81.6 of the girls in the total. The difference was considered small.

Table 2.12

DIFFERENCES IN ACHIEVEMENT — CASTE-WISE

Test	Group	Mean	SD	t
Arith	SC	17.7	7.1	2.20
	ST	15.5	6.2	
	BC	13.1	5.2	
	Others	15.5	5.5	
	Others	15.5	5.5	
RC (P)	ST	19.7	9.3	4.48
	ST	17.6	8.6	
	BC	12.6	7.5	
	Others	16.5	7.7	
	Others	16.5	7.7	
SC (S)	SC	6.6	3.9	4.61
	ST	5.8	3.0	
	BC	3.9	1.9	
	Others	5.3	2.8	
	Others	5.3	2.8	
W.K.	SC	21.1	7.2	5.15*
	ST	16.8	8.9	
	BC	12.2	8.3	
	Others	15.3	8.8	
	Others	15.3	8.8	
A.W.	SC	10.6	3.3	2.00
	ST	8.8	3.7	
	BC	7.8	2.4	
	Others	8.7	3.4	
	Others	8.7	3.4	
S.S.	SC	8.4	5.0	2.21
	ST	9.0	4.5	
	BC	6.9	3.2	
	Others	8.7	4.3	
	Others	8.7	4.3	
Spelling	SC	11.3	7.1	3.30
	ST	10.6	5.9	
	BC	7.2	5.7	
	Others	10.6	5.6	
	Others	10.6	5.6	
RC (total)	SC	26.3	12.3	5.41*
	ST	23.4	10.9	
	BC	16.5	7.7	
	Others	21.8	9.4	
	Others	21.8	9.4	
T (5 + 6 + 7)	SC	30.3	13.2	3.46
	ST	28.4	11.3	
	BC	22.0	7.8	
	Others	28.0	10.4	
	Others	28.0	10.4	

SC -15, ST -694, BC -30, Others -196

** $p < .01$; * $p < .05$

Differences among the means, however, were larger when seen with reference to caste groupings. The distri-

bution of the sample over the castes was quite uneven, SC were a negligible 1.6%, ST -74%, BC -3.2% and 'Others'-21%. SC, a total of 15 pupils only, had the highest aggregate of 95.4, and the group of 30 students belonging to Backward Classes the lowest of 63.7. The other two groups were more comparable to each other with aggregate scores of 84.1 and 80.6. The difference between these two groups was similar to the ones seen earlier for boy/girl or urban/rural divide.

The tendency for the most predominant group to do better than the others had been noticed in several States.

Factors Related to Pupil Achievement

The data regarding home background and other individual related variables were regressed with pupils' performance. Regression analysis was carried out with Reading Comprehension and Arithmetic separately. Before this step, several groups of variables were combined to obtain composite scores on 'Home Background', 'Facilities for Learning' and 'Educational Environment at Home'. The regression coefficients for the variables entered in the three composite variables are given below.

Home Background

	RC	Arith
Location	1.68	0.46
Father's Occupation	0.01	0.19
Caste	-1.64	-0.42
Father's Edn.	0.40	0.44
Mother's Edn.	0.97	0.47
Number of Siblings	-0.78	-0.36
R	0.18	0.11

$p < .01$; $p < .05$

In this set of variables, the two that made the most difference to achievement were caste and mother's education. Caste differences were commented upon above. Although 71% mothers were illiterate and another 13% had studied only upto primary level, 3% were graduates also. The latter percentage was on the high side. With medium of instruction being a language totally different from their mother tongue(s), mother being educated might have acquired a greater significance.

Facilities for Learning

	RC	Arith
Attended Pre-school	0.48	0.13
Place for Study	0.63	0.05
Help in Homework	-0.24	0.42
Avail. of Textbooks	-1.75	-0.94
Avail. of Study Material	1.07	0.21
Helping Household	0.33	-0.32
Regularity in Attendance	2.52	1.10
R	0.15	0.11

$p < .01$; $p < .05$

Availability of textbooks and other study material as well as attending school regularly turned out to be the more important variables. Although 'Mother's Education' had a significant regression coefficient in the 'Home Background', 'Help with Home-Work' did not make any significant contribution (independently) in the second composite variable.

Educational Environment at Home

	RC	Arith
Get News Paper	.29	+1.12
Get Magazines	-.93	-.94
Books at Home	1.81	.50
Reads Books	.30	.48
R	.16	.13

$p < .01$; $p < .05$

Except for 'Books at Home', the picture was not very clear. All the Rs were quite small.

The three variables along with five others were regressed with achievement in Reading Comprehension and Arithmetic separately, their contributions to R^2 are given in Tables 2.13(a) and 2.13(b).

From these two tables one thing stands out immediately—the total variance in pupil achievement that could be explained by pupil-related variables as were considered in this study was very small, being 13% and 6% for differences in Reading Comprehension and Arithmetic, respectively. As in the case of other States, 'Word Knowledge', which had been taken as a surrogate for differences in ability, had the largest share.

The other variables which contributed consistently (i.e., where Fs were significant) were 'Educational Environment at Home' with 'Age' following with one of the Fs being significant. It had a negative correlation (r) with both the criterion variables. Average age was high in Arunachal Pradesh, with a fairly large spread. 'Home Background' and 'Facilities for Learning' had reasonable 'r's but the latter did not make a statistically significant contribution to R^2 with respect to Arithmetic. Similarity of language was unlikely to add to R^2 as a very large majority of 95% did not speak English at home. But oddly 'Educational Environment at Home' contributed significant increments to R^2 for both the criteria. The picture regarding availability of newspapers, magazines or books at home was not very different from that which prevailed in other States. It is likely that even if the children could not take direct advantage of the reading material available at home, the environment that the reading parents created had some impact on the children's achievement.

The impact of individual-related variables, particularly the home background, on achievements of pupils were analysed as shown in Tables 2.13(a) and 2.13(b).

In Arunachal Pradesh, the percentage of variance explained by the same was quite low, being 13.2 and 6.4% with respect to the two criteria. Differences in the school environment, like the home environment, would also affect pupil achievement -- in this case, the average achievement of pupils in the school. In Arunachal Pradesh, 95% of the schools in the sample were being managed by the State or the Central government (probably the former, in most cases); therefore, apparently, there need not have been too much difference in the facilities provided but the variation could exist in reality, as also in

the utilisation of the facilities available.

All school-related variables, excluding information about specific practices adopted by teachers in the classroom, were regressed with pupil achievement. The average achievement of the pupils in the school was used in place of the score attained by the individual student. It may be mentioned that school means differed from each other only a little less than the scores obtained by the pupils. The standard deviation of the distribution of 84 school means was 5.4 as compared to 6.4 of the pupil scores²¹.

Table 2.13(a)

CONTRIBUTION OF PUPIL-RELATED VARIABLES TO ACHIEVEMENT IN READING COMPREHENSION

<i>Variable</i>	<i>R</i>	<i>R²</i>	<i>Increment in R²</i>	<i>F</i>	<i>r</i>
Word Knowledge	0.3085	0.0952	0.0952	98.15	0.31
Home Background	0.3375	0.1139	0.0187	19.71	0.17
Edual Environment	0.3510	0.1232	0.0093	9.85	0.14
Facilities for Learning	0.3573	0.1277	0.0045	4.79	0.14
Age	0.3611	0.1304	0.0027	2.92	-0.11
Gender	0.3626	0.1315	0.0010	1.11	0.00
Similar Language	0.3633	0.1320	0.0005	0.47	0.03
Time Watch TV	0.3637	0.1323	0.0003	0.36	0.07

$p < 0.01$, $p < 0.05$

Table 2.13(b)

CONTRIBUTION OF PUPIL-RELATED VARIABLES TO ACHIEVEMENT IN ARITHMETIC

<i>Variable</i>	<i>R</i>	<i>R²</i>	<i>Increment in R²</i>	<i>F</i>	<i>r</i>
Word Knowledge	0.2003	0.0401	0.0401	38.98*	0.20
Edual Environment	0.2262	0.0512	0.0110	10.85**	0.11
Age	0.2404	0.0578	0.0066	6.54	-0.11
Gender	0.2466	0.0608	0.0031	3.04	-0.07
Home Background	0.2506	0.0628	0.0020	1.96	0.09
Time Watch TV	0.2523	0.0636	0.0008	0.81	0.04
Facilities for Learning	0.2537	0.0643	0.0007	—	0.09
Similar Language	0.2537	0.0643	0.0000	—	0.02

$p < 0.01$

21 Both of these were lower than the respective country medians.

Table 2.14(a)

CONTRIBUTION OF SCHOOL-RELATED VARIABLES TO ACHIEVEMENT IN READING COMPREHENSION

Variable	R	R ²	Increment in R ²	F	r
Admn of School	0.3811	0.1453	0.1453	13.94**	0.38
Teachers Untrained	0.4325	0.1871	0.0418	4.17	0.18
PTA	0.4857	0.2359	0.0488	5.11*	0.24
Teaching Exp. of the Headmaster	0.5130	0.2632	0.0273	2.93	0.09
Facilities for Teacher	0.5328	0.2838	0.0206	2.25	-0.06
Proportion SC/ST	0.5493	0.3017	0.0179	1.97	-0.12
Facilities for Pupils	0.5777	0.3111	0.0094	1.03	0.20
Age of the Pupil	0.5646	0.3188	0.0077	.86	-0.22

** p < 0.1, * p < 0.05

Table 2.14(b)

CONTRIBUTION OF SCHOOL-RELATED VARIABLES TO ACHIEVEMENT IN ARITHMETIC

Variable	R	R ²	Increment in R ²	F	r
Age of the Pupil	0.2254	0.0508	0.0508	4.39	-0.23
Teachers Untrained	0.2831	0.0801	0.0293	2.58	0.15
PTA	0.3244	0.1053	0.0251	2.24	0.20
Time given to Arithmetic	0.3606	0.1301	0.0248	2.25	0.19
Facilities for Teachers	0.3979	0.1583	0.0283	2.62	-0.16
Admn of School	0.4261	0.1816	0.0233	2.19	0.17
Professional training of the Headmaster	0.4644	0.2156	0.0341	3.30	0.08

p < 0.05

Although all the 31 variables given in the list at the end of the report were regressed, only those which contributed statistically significant increment to R² and a few more down the line have been shown in the two tables given above. The total contribution to R² was 42% for Reading Comprehension and 40% for Arithmetic, much higher than 13% and 6%, respectively, for differences related to home background. The two sets of values of R² could be partly considered compensatory.²² It may be mentioned again, that the medium of instruction in Arunachal Pradesh was English and 95% children said that at home they spoke some language other than English. In a situation like this, school-related variables were expected to be more significant than home background variables. R² for Reading Comprehension could

be higher because of learning and evaluation being conducted in a language that was not the mother tongue of the children. Most learning would depend on comprehension of the medium of instruction.

There was not a single variable which made statistically significant contributions to differences in both the criteria, making interpretations difficult. 'Administration of School', 'Proportion of Untrained Teachers' and 'Existence of P.T.A.' seemed to make a difference to the achievements of pupils in English, i.e., the language for which the competence in Reading Comprehension was tested. Although there was a very small percentage of private schools, they could have had teachers who were more proficient in English. The proportion of untrained teachers also made a significant contribution to R² and 'r'

²² These are not additive as the two analyses carried out were independent of each other.

in this case (as also for arithmetic) was positive. As a very large 70% teachers in the schools in the sample were graduates they were likely to know more English. Even if they were not trained,²³ they probably made some difference to the learning of language. The P.T.A. could exercise pressure for emphasis on learning of language - English in this case — which would have a dual importance because of being the medium of instruction as well as having a special status in the country for higher education and for employment for senior-level jobs.

Significant increment to R^2 for Arithmetic was contributed only by 'Average Age of the Pupil'. It had negative 'r's' (- 23 and - 22) for both the criteria. It was not clear why some schools tended to retain more repeaters, which led to a higher average age of the pupils than others. The difference could arise from the regions, mean

achievements from which fluctuated quite widely. While none of the other variables added statistically significant increments to R^2 , the slow and steady contribution right up to the end added up to substantial percentages as reported in the beginning. The differences attributable to school-related variables in Arunachal Pradesh were much larger than those related to homes. Fifty-five per cent fathers and 71% mothers were illiterate but 70% teachers working in the primary sections were graduates. According to the 1986-87 statistics, the per capita expenditure on education²⁴ in Arunachal Pradesh was the second highest in the 23 administrative units being compared in this study, and its per capita State domestic product was not very low either — ranking fifth in descending order in the 17 States participating in this project, for which the information was available.

²³ As per data supplied by the headmasters, 62% of the teachers in the primary sections were untrained.

²⁴ Budget estimates.

Table 2-A

INTER CORRELATIONS OF PUPIL-RELATED VARIABLES AND ACHIEVEMENT

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
1	1.00	12	-02	03	-03	-06	-24	-29	-23	09	-15	-19	05	04	09	04	-18	-22	-30	-33	-25	02	05	04	.07	-05	00	02	05	25	-03	29
2		1.00	-05	05	-17	-03	-08	-28	-23	10	03	-15	05	-05	-12	-13	-11	-09	-16	-11	-25	-11	-11	-09	-08	-13	-08	-06	-11	-11	-16	-16
3			1.00	-06	-01	-07	02	06	05	.02	.08	.06	05	-03	-05	-04	02	-01	-01	-04	01	-07	02	-03	-12	03	00	03	00	05	-04	00
4				1.00	.14	-10	-05	-16	-23	07	-04	-11	00	01	-03	-02	-11	-09	-09	-01	-04	01	-04	-06	-07	-04	-04	-05	-29	-00	-08	
5					1.00	-05	24	41	32	-13	.06	21	00	-04	05	02	16	25	22	24	25	-02	-07	-08	-09	-03	-03	-01	-08	-42	03	.17
6						1.00	14	04	10	-08	.09	16	-03	-02	-02	-04	09	11	17	15	11	02	02	05	-04	07	06	09	03	10	00	15
7							1.00	30	31	-14	14	26	00	-07	06	04	21	29	.30	29	25	02	03	-01	-08	-10	.08	02	02	10	16	26
8								1.00	.65	-14	21	37	10	03	11	07	36	38	43	38	46	.04	07	.04	03	.14	10	08	07	36	09	37
9									1.00	-24	12	38	06	-06	11	03	37	40	.45	34	38	08	10	10	05	.17	17	11	11	55	01	37
10										1.00	.06	-09	01	-01	01	-15	-09	-12	-09	-07	-06	-07	-06	00	-11	-08	-08	-07	-34	-00	-09	
11											1.00	23	07	03	-00	-05	14	26	26	26	14	-00	04	-02	-00	02	-00	07	02	02	14	21
12												1.00	02	-00	10	-05	24	38	32	.27	27	03	-00	-01	-06	02	01	07	-01	17	-02	26
13													1.00	13	07	06	-04	-03	-00	03	-02	-06	-04	-06	-00	-05	-07	02	-05	08	-33	01
14														1.00	-04	-05	08	04	09	08	01	01	04	.09	12	03	-08	01	06	-01	36	06
15															1.00	15	07	06	-02	-06	04	-02	02	04	01	00	02	07	.03	10	20	-03
16																1.00	01	-05	00	-02	09	08	10	09	13	09	14	.12	11	04	70	01
17																	1.00	42	45	30	32	09	06	08	00	15	10	11	07	19	10	41
18																		1.00	47	46	37	02	04	.05	02	12	08	09	05	16	09	29
19																			1.00	56	46	.10	15	13	04	25	19	12	15	.21	13	19
20																				1.00	42	08	08	10	04	17	12	06	09	07	.54	
21																				1.00	04	06	07	05	20	16	11	07	14	13	41	
22																					1.00	60	50	20	.45	41	26	62	09	09	11	
23																						1.00	59	30	52	51	.32	97	16	13	13	
24																							1.00	24	45	.44	31	77	14	12	11	
25																								1.00	20	22	22	31	10	13	02	
26																									1.00	54	35	54	17	11	22	
27																										1.00	42	54	16	10	16	
28																											1.00	35	13	10	10	
29																												1.00	17	14	14	
30																													1.00	11	30	
31																														1.00	22	
32																															1.00	

Table 2-B
INTER CORRELATIONS OF SCHOOL-RELATED VARIABLES AND ACHIEVEMENT

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
100	53	52	42	-08	-11	11	-14	07	11	-08	10	08	-17	-52	13	02	-12	07	-03	-06	-01	-17	15	-06	02	-06	01	01	11	01	08	-03	01	-01	-06	-01	11	-02
2	100	75	45	-12	04	-06	-06	-20	26	-11	24	02	09	-41	29	07	-06	16	01	25	15	21	-14	07	-06	09	11	10	10	16	02	06	06	00	01	06	05	07
3	100	60	-06	00	06	00	19	20	-10	24	05	03	-41	24	14	-03	12	01	18	10	19	-10	13	-01	01	03	01	14	11	06	08	08	16	02	07	-02	09	
4	100	04	-11	03	-21	03	-21	20	18	04	-08	17	10	-40	00	-08	-17	06	-06	-04	-11	-06	-00	-10	12	-10	-08	04	08	04	-08	-12	02	14	-17	-06	-05	-09
5	100	-05	-05	-37	13	11	23	-51	29	08	-40	-15	00	-24	-25	-18	-28	19	33	-24	-40	04	21	10	04	-32	-04	02	00	23	-08	01	05	02				
6	100	-81	37	-29	-09	-04	20	01	-26	-07	19	24	21	22	25	56	13	-08	-04	46	-19	-03	04	-04	46	00	15	39	28	21	33	40	31	38				
7	100	-28	19	06	-00	-10	-00	17	10	-17	-10	-17	-25	-21	-60	-17	-11	-01	-27	13	-06	-13	-13	00	-07	-08	-24	-19	-13	-29	05	-25	-24					
8	100	-23	05	01	41	-17	-11	08	41	27	13	13	26	28	03	08	-19	22	17	-08	-07	02	05	15	01	18	09	01	30	23	14	16						
9	100	-13	22	-54	18	18	02	-48	-43	-31	-15	-16	-70	-21	05	26	-36	04	-23	-24	06	00	-10	00	-19	-04	19	-17	-07	-06	-16							
10	100	00	06	05	16	-18	12	11	-27	07	-02	-01	-19	07	-17	-19	-24	23	18	04	00	22	-13	-10	-18	05	-23	-17	-07	-13								
11	100	-15	17	10	27	01	-11	11	-11	32	-13	-13	38	21	-08	-06	06	12	22	09	00	00	02	-03	03	05	01	-00	01									
12	100	-31	-18	04	61	00	-03	17	18	37	18	-08	-31	22	25	13	00	-06	03	24	04	12	02	-18	18	10	02	09										
13	100	05	-17	-22	-09	10	-13	03	-09	11	10	08	-03	-16	16	20	01	13	-15	-04	-10	-15	12	-19	13	16	-12											
14	100	10	-31	-32	-31	01	-04	-17	-01	-07	-11	-10	-02	13	-09	-08	-30	-25	-23	-23	-15	25	-22	-23	-17	-22												
15	100	04	-04	08	-09	16	-08	-18	30	08	-06	03	11	09	-06	-11	-03	15	18	13	-08	15	09	-02	18													
16	100	61	05	12	16	33	15	-05	-26	03	04	25	12	12	20	39	14	21	09	-18	20	12	03	19														
17	100	09	-02	04	22	05	01	-22	06	-09	11	10	07	06	11	07	25	12	-05	12	08	09	23															
18	100	24	31	26	10	31	-06	22	-08	06	28	-04	08	02	05	07	02	-16	-07	-02	-09	-03	-07	12	-06													
19	100	36	24	13	-10	-06	15	01	25	13	09	00	02	-16	-07	-02	-09	-03	-07	12	-06																	
20	100	25	-06	12	-03	15	-05	23	30	19	17	00	17	18	20	03	33	27	32	20																		
21	100	33	-09	-17	65	-01	03	12	21	-03	19	-01	19	14	-01	22	16	18	19																			
22	100	-06	-20	28	-04	-02	-02	07	-18	-04	-14	-10	-21	01	-06	-04	-11	-14																				
23	100	19	-13	-16	05	20	-07	27	-04	07	08	-07	-13	-00	-01	-02	04																					
24	100	-19	-02	-07	04	06	13	-18	-02	11	-00	09	01	-02	-02	02																						
25	100	-03	-13	-11	21	-01	15	04	15	14	08	18	16	18	16																							
26	100	-28	-31	-02	-13	02	-13	-14	-08	-23	-09	-10	-14	-13																								
27	100	72	16	04	13	11	-03	-09	-07	-02	-05	-04	-05																									
28	100	10	-03	18	19	07	07	-05	08	06	10	08																										
29	100	17	02	12	07	16	05	14	03	01	10																											
30	100	02	20	25	16	04	12	21	11	24																												
31	100	01	-06	03	-16	-02	-06	-04	-04																													
32	100	75	69	23	65	61	39	78																														
33	100	72	31	67	63	40	98																															
34	100	36	69	69	53	85																																
35	100	24	30	26	35																																	
36	100	66	36	71																																		
37	100	73	68																																			
38	100	46																																				
39	100																																					

Assam

The number of pupils of Class IV that were to be tested in each of the States were allocated in proportion to the numbers enrolled in primary classes as per information available in the Fifth All India Educational Survey conducted by the NCERT in 1986. Accordingly, the State of Assam was to collect data from nearly 2,600 pupils studying in 202 schools. In addition to the capital city, the schools were selected from one district each identified in the three regions, namely, Upper Assam, Lower Assam and the Hills. The details of samples of pupils and schools that were entered in the analyses can be seen in Table 3.1

Table 3.1

SAMPLES PLANNED AND ENTERED IN ANALYSES

Region	No. of Schools		No. of Pupils	
Capital city (Guwahati)	8 ¹	15 ²	200	195
Upper Assam (Nagaon)	111	111	1384	977
Lower Assam (Dhubri)	49	59	640	623
Hills (Karbi Anglong)	34	31	370	178
Total	202	216	2594	1973

The State managed 76% of the planned pupil sample from 107% of the schools.³ Broadly speaking this kind of picture was expected.

Seventy-five per cent average attendance of the enrolled children had been the experience in some other studies conducted earlier. It turned out to be less than that in Assam.

The proportion of children to be selected from each region were decided so as to get a self-weighted sample for the State. High fluctuation in percentages of samples obtained in relation to the numbers planned in the various regions would disturb the representativeness of the sample. It would become particularly significant in case

the average achievement of the pupils differed from one region to another.

The obtained samples were nearly 100% in the capital city of Guwahati and Lower Assam but were only 48% for the Hills and 70% for Upper Assam. Table 3.6 gives the differences between the means of the pupils from these regions, the same were lower for the two regions that were under-represented. The aggregate mean for the Hills was very low, affecting the total State mean — with its contribution of a smaller sample — in the positive direction. It must be mentioned that nearly all the schools were reached in these regions — 100% in Upper Assam and 91% in the Hills. The obtained samples of pupils were lower because of the differences in attendance and enrolment. As the average enrolment for the entire State was used in determining the number of schools and if that or the percentage of attendance fluctuated over the regions very highly, this could happen, but it would not, in that case, disturb the representativeness of the sample.

Nevertheless, the possibility of the obtained mean being somewhat higher than the real mean for the entire State remained.

The representativeness of the sample was also checked by comparing some of the statistics obtained from this sample with corresponding figures available in the Fifth All India Educational Survey conducted by the NCERT in 1986.

Table 3.2

SAMPLE AS COMPARED TO THE POPULATION

Variable	Percentage	
	1986 Survey	Sample in the Study
Primary (only) Schools	96.5	96.5 ⁴
Girl Students	43.5	45.8 ⁵
Scheduled Caste Students	10.6	12.3 ⁵
Scheduled Tribe Students	14.6	10.4 ⁵
Women Teachers	25.6	35.8 ⁶
Trained Teachers	62.9	71.7 ⁴

1 The number planned.

2 The number entered in the analyses.

3 An additional list of schools was provided to each State to enable it to make up the estimated sample of pupils.

Source

4 School Questionnaire

5 Pupil Questionnaire

6 Teacher Questionnaire.

The State kept to the selected schools, as a result the deviations in most of the statistics obtained from the 1986 survey were not very large or unexpected except in the case of Scheduled Tribe pupils. A small increase in the percentage of girls or Scheduled Caste students were in the expected directions as persistent efforts are made to get socially disadvantaged groups into the schools. An increase in percentage of women and trained teachers could also be explained for similar reasons. A lower percentage of ST children in the sample could not be explained. It could be related to the regional imbalance, i.e., if there was a concentration of ST groups in a particular region and that region had gone under-represented.

The Tests in the State

Assam could not participate in the try-out of the test material. The translation of the final drafts was done in Assamese.

Table 3.3

DIFFICULTY VALUES OF ITEMS

Pass Percentage	Arith	RC(P)	RC(S)	W K	A W	S S	Spell
0 - 9	—		1		1		
10 - 19	2	1	—		2		—
20 - 29	9	4	—		4		3
30 - 39	5	7	3	1	8		4
40 - 49	12	9	4	8	6	2	7
50 - 59	3	10	7	21	2	1	3
60 - 69	4	7	—	8	1	12	5
70 - 79	3	6	1	2	—	2	3
80 - 89	2	—	—	—	—	1	—
Median	42.8	50.5	49.5	54.7	35.7	64.0	47.4

The items in the battery were evenly divided below and above the 50% pass percentage for Assam, though the same could not be said for each test. The test for choice of Appropriate Word proved difficult and the one on Sentence Structure proved very easy. The latter was constructed by the State centre itself. It could very easily have alternatives which would look absurd and thus get eliminated as plausible correct answers easily. The test on spelling was also constructed at the State level but the difficulty level of items was quite suitable.

By and large, the difficulty level of the battery could be considered suitable for the State.

The Groups in the Study

The Pupils

Of the nearly two thousand children who responded to the tests, 83% were from rural areas; 46% were girls. The largest group of children — 66.5% — in the State belonged to 'Others', the rest were divided almost evenly over the remaining three categories. The children — tended to be young, their average age was 9.6 years only.

Twenty-one per cent fathers and 40% mothers were illiterate, with another 32% fathers and 30% mothers having studied only up to the primary classes. On the other side, 6.5% fathers and 3% mothers were graduates. Nearly half the fathers were farmers, 12% of them were either unskilled workers or unemployed. On the positive side, 13% fathers were either professionals or had jobs with reasonable salaries. Nearly 50% families had more than five children, only 12% children had one or no sibling.

A small 10% had attended pre-school in Assam, the percentage being the lowest when compared with the other States. Only 33.5% children spoke Assamese at home, which was the medium of instruction for this group in school. About one among every four children were required to help with domestic or other family-related work for two or more hours every day.

While 76% children reported having most of the textbooks, only 61% said they had adequate amount of other study material, such as notebooks, etc. Twenty per cent children reported very limited supply of the latter. Fifty-two per cent children received help from the family in doing their homework and 41% said they had some place earmarked at home where they could sit and study. Seventy-two per cent could attend school almost regularly; a negligible 1% had to miss it frequently.

A newspaper and magazines were received in 29% of the homes. The picture regarding the availability of books was no different than elsewhere in the country, with 61% families having no books other than the textbooks. Correspondingly, 63% children said they did not read anything except their school books; only 2% said they read a reasonable amount besides their textbooks. Twenty per cent children watched TV for some time.

The children from Assam were very close to the country-level averages on most variables except on pre-school education and on home language being different from their medium of instruction. They had a disadvantage on both these. The availability of textbooks and

other study material was also on the lower side

The Teachers

Of the 260 teachers who responded to the Teacher Questionnaire, 77% were working in the rural areas, thirty-six per cent were women. Half of the teachers were in the age group 35-50 years, 44% being younger than 35 years. Only 23% had taught for less than five years, on the other side, 21% had been teaching for more than 20 years.

More than 50% teachers in Assam were matriculates; 12% had not studied upto Class X and 11% were graduates. Sixty per cent teachers had received only one year of professional training and another 9%, two years of Junior Basic Training. Seven per cent teachers did not clarify their status regarding professional education; they could be untrained. The headmasters reported 28% teachers to be untrained. Nearly 50% had received some in-service education.

More than 80% teachers lived fairly close to their schools, requiring less than one hour to travel to and from school.

Though only 32% teachers said they adopted some new practices in teaching, most felt that innovative practices would improve students' interest and achievement. Fifty-two per cent teachers said they often used material other than textbooks in their teaching but 14% rarely did so. Twenty-eight per cent teachers had prepared plenty of audio-visual material themselves and nearly 60% had involved even their pupils in this activity.

Nearly 90% teachers corrected pupils' homework regularly, 83% helped the weak students themselves by paying extra attention. Ten per cent did not respond to this question, it is likely that they simply ignored such students but another 7% asked parents to arrange private tuition. The number of teachers who evaluated pupil progress only once a year was very high -- 57%; on the other side, 28% teachers gave monthly tests. Two-thirds of the teachers used the feedback from evaluation only for promotion and not for improvement of teaching learning.

Thirty-three per cent teachers did not have copies of textbooks, either their own or from the library. They borrowed them from the pupils, probably on the spot. Thirty per cent teachers had no access to an Assamese language dictionary. Pupils often asked questions in 73% of the classrooms.

The teachers in Assam were moderately educated, nearly a third of them did not have copies of text books. Pupil progress was not evaluated regularly, and even where it was, full utilization of such feedback was not made.

The Headmasters

Twenty-two per cent of the 202 headmasters that responded to the School Questionnaire were untrained, 5% were B.Eds, and most of the rest had undergone one year of professional education meant for training primary school teachers. They were quite senior in age, only one-fifth being younger than 35 years. Seventy-two per cent had taught for more than 15 years but 7% had teaching experience of less than five years. Nearly half of them had worked as headmasters for more than ten years, 20% were new to this leadership role.

Although all of them were not trained, the headmasters in Assam were an experienced group.

The Schools

Eighty-five per cent schools were in the rural area; 92% were managed by the State government and another 6% by local bodies; there were no totally private schools in the sample. Nearly all the schools were primary schools; only 3.5% were middle schools. Eleven per cent schools had pre-primary classes. With the exception of three schools, all others were co-educational. Newly-opened (i.e., in the last ten years) schools were a small 6%.

Twenty-three per cent schools had a room for the headmaster; a common room for teachers was available in 16% of the schools. Sixty-two per cent schools did not have the facility of drinking water, and urinals for girls were available in only 8% of the schools. A Book Bank existed in 15% schools, and the average number of books in the library was a meagre 66.

The responses on 'No-Detention Policy' were very varied; 27% headmasters omitted to respond. It is likely that they detained non-achieving children right in Class I but were reluctant to admit it; another 25% said they detained children, if necessary, in Class I as well. Twenty-three per cent schools said they continued to promote children up to Class IV, regardless of shortcomings in their achievements.

Operation Blackboard had reached one-third of the schools so far. More than two-thirds of the schools had a PTA and held one or more meetings a year.

The schools in Assam were managed by the State government. The physical facilities were quite inadequate. In practice, there was no policy regarding detaining or continuing children in schools regardless of their performance.

Achievements of Pupils

The achievements of 1973 pupils who had studied up to Class IV of the formal system have been summarised in the following pages.

Table 3.4

ACHIEVEMENT OF PUPILS

Test	Arith (40) ⁷	RC(P) (44)	RC(S) (16)	W K (40)	A W (24)	S S (18)	Spell (25)	Total (207)
Mean	18.4	22.1	7.7	22.3	8.6	11.5	12.4	103.0
SD	8.3	9.9	4.3	8.7	4.8	4.6	6.0	
Mean as Percentage	46.0	50.2	48.1	55.7	35.8	63.9	49.6	49.2
K R - 20	0.90	0.92	0.85	0.89	0.81	0.86	0.88	
All India	41.2	45.4	43.1	49.5	41.7	57.8 ⁸	42.8 ⁸	45.2
Median as Percentage								

As was indicated by the pass percentages on items, the average achievement of pupils varied close to 50% in 5 out of 7 tests. In two others it deviated in the opposite direction, resulting in near 50% achievement in the total. Assam had higher than the national average achievement on all the tests except the one on Appropriate Word. The test was particularly sensitive to choice of words in the alternatives, which could render it too easy or too difficult.

All States were requested to test a small sample of pupils of Class V, using the same test battery. The purpose was to assess the gain in achievement during one academic year. The States were advised to administer tests to at least 200 pupils of Class V from 10 schools

(minimum) selected as a representative sample on the basis of judgment. Assam administered tests to 419 pupils selected from a very large number of schools⁹.

The table presents a very perplexing picture but this was not exclusive to Assam only. Why do pupils of Class V achieve lower than those of Class IV? It could be somewhat acceptable in a test of arithmetic where 'recency' could play some part but it made no sense in tests of language. The material chosen was not specific to the textbooks.

Each State was divided into several regions as the first step in sampling. The purpose was twofold. On the one hand, it would enhance the representativeness of the sample by including schools from all the regions, on

Table 3.5

MEAN ACHIEVEMENTS OF PUPILS — CLASSES IV AND V

Class	Arith	RC(P)	RC(S)	W K	A.W.	S S	Spell	Total
IV (1973)	18.4	22.1	7.7	22.3	8.6	11.5	12.4	103.0
V (419)	16.0	19.3	6.3	19.8	7.2	9.9	10.7	89.2

Table 3.6

ACHIEVEMENTS OF PUPILS — REGION-WISE

Region		Arith	RC(P)	RC(S)	W.K.	A W	S S	Spell	Total
Capital City (195)	M	18.0	22.0	6.7	22.8	9.5	12.5	12.6	104.1
	SD	7.8	7.4	3.9	7.0	4.0	3.9	5.6	
Upper Assam (977)	M	17.5	20.9	7.2	21.8	8.2	11.5	12.0	99.1
	SD	7.4	9.5	4.2	8.3	4.7	4.5	5.8	
Lower Assam (623)	M	21.9	25.5	9.3	23.9	9.3	11.9	13.5	115.3
	SD	8.7	10.3	4.1	9.7	5.2	4.8	6.7	
Hills (178)	M	11.0	16.9	5.8	19.5	7.0	9.3	10.4	79.9
	SD	6.4	8.8	3.7	7.2	3.9	4.3	4.9	

7 The maximum possible score

8 Tripura is excluded. The content of the tests was not common in all the States.

9 They probably made a small number of pupils of Class V sit with the group of Class IV pupils who took the tests.

the other, data would be available for comparing the regions among themselves. The administrators and educational planners would be able to identify the weaker regions that were in need of more help.

The regions were very different from each other. Pupils from the 'Hills' achieved only 70% as high as those from Lower Assam. It is likely that the difficult geographical terrain affected all kinds of facilitating factors such as the availability of a sufficient number of teachers and pupils attending school. Even availability of textbooks etc., may be lower in the area.

The achievements of pupils on two tests, namely Arithmetic and Reading Comprehension (Para), were studied objective-wise, and in the case of Arithmetic, topic-wise also.

Table 3.7
ACHIEVEMENT IN ARITHMETIC — OBJECTIVE-WISE

Objective	Mean	SD	Mean as Percentage
Knowledge (19)	9.2	4.0	48.4
Understanding (12)	5.6	2.7	46.7
Application (9)	3.6	2.3	40.0
Total (40)	18.4	8.3	46.0

Though not very different from each other, the average achievement on the three objectives were on the expected lines. Little or no difference between achievement on items classified under Knowledge and Understanding was seen in other States as well.

Table 3.8
ACHIEVEMENT IN ARITHMETIC — TOPIC-WISE

Topic	Mean	SD	Mean as Percentage
Time (3)	1.7	1.1	56.7
Factors and Multiples (9)	2.5	1.7	27.8
Fundamental Operations (12)	5.8	3.1	48.3
Weights and Measures (3)	1.4	0.9	46.7
Fractions (3)	1.9	1.4	63.3
Decimals (7)	3.1	1.6	44.3
Unitary method and Others (3)	2.0	0.9	66.7
Total (40)	18.4	8.3	46.0

Higher percentage scores on Unitary Method and Time were noticed in most States. 'Recency' in learning these topics was considered as one of the reasons for the higher achievement, as in most States, these topics were introduced in Class IV. The items under Topic 7 were very similar to the questions practised in the classroom. Assam, however, had a high score on Fractions as well. Once again, 'recency' could be at the back of it.

The only low score was on Factors and Multiples; it is likely that these were not taught in any depth up to this level of schooling.

A score of 48.3% on Fundamental Operations was not considered satisfactory.

Table 3.9
ACHIEVEMENT IN READING COMPREHENSION
OBJECTIVE-WISE

Objective	Mean	SD	Mean as Percentage
Noting Detail (17)	10.1	4.2	59.4
Simple Comprehension ¹⁰ (13)	6.7	3.4	51.5
Inference ¹¹ (14)	5.3	3.1	37.8
Total (44)	22.1	9.9	50.2

Proportionate scores on the three objectives were in the expected direction. A near 60% mean on getting simple information could be considered satisfactory. A low score on "Inference" was expected as the young pupils were learning to draw conclusions and identify implied meanings.

The average scores of pupils when divided over location, gender and caste were studied to understand the differences between these groups, if any.

Table 3.10
DIFFERENCES IN ACHIEVEMENT — LOCATION-WISE

Test	Location	Mean	SD	t
Arith	U	17.3	7.9	2.59'
	R	18.6	8.4	
RC(P)	U	20.8	8.5	7.35'
	R	22.4	10.1	
RC(S)	U	6.2	4.1	7.18
	R	8.0	4.2	
W.K.	U	22.2	8.5	0.37
	R	22.3	8.7	
A.W.	U	8.8	4.8	1.02
	R	8.5	4.8	
S.S.	U	11.3	4.6	0.94
	R	11.6	4.6	
Spelling	U	11.9	6.1	1.74
	R	12.5	6.0	
RC (total)	U	26.9	11.5	4.40
	R	30.3	13.2	
T (5+6+7)	U	32.0	13.5	0.79
	R	32.6	12.4	

Urban - 335 Rural - 1638'

P < .01

The proportion of urban children in the obtained sample in the State was 16% as compared to the 10% enrolment in the 1986 survey. The reasons could lie in: (i) change in the composition of the population, (ii)

10 Includes (a) deriving meaning of difficult words from the context and (b) relating things at a simple level

11 Includes identifying the message or the central idea and the title of the write up

higher absenteeism in rural areas, and (iii) higher forced enrolment in rural areas

Contrary to general *a priori* expectation, the rural group achieved higher than the urban group in six out of seven tests, three of these differences were statistically significant. The group had an aggregate score of 98.5 as compared to 103.9 of the rural group. In some States, the urban groups get lifted because of the availability of a parallel system being managed through private or private aided fee-charging English medium schools. The socio-economic educated strata prefers to send their children to these schools. English-medium schools are not available in rural areas.

Table 3.11

DIFFERENCES IN ACHIEVEMENT — GENDER-WISE

Test	Gender	Mean	SD	t
Arith	B	18.4	8.1	0.49
	G	18.3	8.6	
RC (P)	B	22.0	9.9	0.47
	G	22.2	9.9	
RC (S)	B	7.7	4.3	0.07
	G	7.7	4.2	
W.K.	B	22.4	8.6	0.24
	G	22.3	8.7	
A.W.	B	8.4	4.8	1.52
	G	8.7	4.8	
S.S.	B	11.3	4.6	2.32
	G	11.8	4.5	
Spelling	B	12.1	6.0	2.29
	G	12.7	6.0	
RC (total)	B	29.7	13.0	0.38
	G	29.9	13.0	
T (5 + 6 + 7)	B	31.8	12.6	2.53*
	G	33.3	12.6	

Boys - 1070, Girls - 903

* p < .05

Along the gender divide there were practically no differences in the achievements of boys and girls. The girls did slightly better than the boys on two tests, namely, Sentence Structure and Spelling. In the aggregate, the girls had a score of 103.7 against the 102.3 of the boys.

Differences were very marked on the caste divisions. Unlike many other States none of the caste groups was near negligible. Although 'Others' were 66.5% of the total group, each of the rest of the three was higher than 10% of the sample. The mean achievement of any of the groups, thus, cannot be considered as accidental.

The backward classes not only had the highest score; it was much higher than that of any other group. SC/ST got bracketed together. The aggregates were: 'Others' - 105.2, BC - 114.3; ST - 91.2, SC - 90.4. It had been noticed in several States that if the BC was not a very small group, it tended to achieve high. These could be the

people depending on occupations which require some education.

Table 3.12

DIFFERENCES IN ACHIEVEMENT — CASTE-WISE

Test	Group	Mean	SD	t
Arith	SC	15.5	7.3	32.08
	ST	14.6	8.0	
	BC	20.3	8.6	
	Others	19.2	8.2	
RC(P)	SC	18.7	9.5	22.04**
	ST	19.7	9.9	
	BC	25.0	9.6	
	Others	22.6	9.7	
RC (S)	SC	6.5	4.2	12.44
	ST	7.1	4.2	
	BC	8.7	4.4	
	Others	7.8	4.2	
W.K.	SC	20.1	8.2	16.02*
	ST	20.2	8.3	
	BC	24.8	7.9	
	Others	22.6	8.8	
A.W.	SC	7.5	4.6	8.83*
	ST	7.9	4.7	
	BC	9.6	4.6	
	Others	8.7	4.8	
S.S.	SC	10.7	4.7	10.16
	ST	10.6	4.6	
	BC	12.6	4.0	
	Others	11.7	4.6	
Spelling	SC	11.4	6.1	8.01
	ST	11.1	5.5	
	BC	13.3	6.2	
	Others	12.6	6.0	
RC (total)	SC	25.1	12.6	22.26
	ST	26.8	13.0	
	BC	33.7	12.9	
	Others	30.4	12.8	
T (5 + 6 + 7)	SC	29.5	12.3	13.07
	ST	29.5	12.0	
	BC	35.5	12.6	
	Others	33.0	12.6	

SC - 243 ST - 205 BC - 212 Others - 1313*

** p < .01

Factors Related to Pupil Achievement

Regression analysis for pupil related variables was carried out to understand their contribution to achievement in Reading Comprehension and Arithmetic. Before regressing pupil background variables with achievement, several of these were combined in three composite variables.

The regression coefficients of the equations from which these variables were developed are given below

Home Background

	<i>RC</i>	<i>Arith</i>
Location	3.83	1.83*
Father's Occupation	-0.45*	-0.28*
Caste	1.34*	1.21
Father's Education	-0.42	-0.08
Mother's Education	1.68	0.91*
Number of Siblings	1.72*	0.67*
R	0.23	0.23

* $p < 0.1$, $P < 0.05$

With the exception of Father's Education, all other variables had significant regression coefficients with respect to both the criterion variables. In other words, differences in these variables had some impact on achievement of children in school. Father's education was more likely to have got subsumed in occupation. The two 'r's were moderate.

Facilities for Learning

	<i>RC</i>	<i>Arith</i>
Attended Pre-school	-1.43	-0.97
Place for Study	0.37	0.39
Help in Homework	0.39	0.93
Availability of Textbooks	0.19	-0.36
Availability of Study Material	-1.08**	-0.87**
Helping Household	-0.18	-0.03
Regularity in Attendance	0.63	1.77*
R	0.08	0.16

* $P < 0.1$; ** $p < 0.05$

In contrast to the previous composite variable, there were very few regression coefficients which were statistically significant. Significant regression coefficients of availability of notebooks for both the criteria had negative signs, which was difficult to understand. Could this be related to the economic status of the family? Differences in achievement in arithmetic seemed to increase in relation to help received from the family in doing the homework and attending school regularly. The family's attitude towards learning language, particularly the vernacular, could be more casual. Negative signs with regression coefficients with 'Attend Pre-school' had been noticed in some other States as well. One of the State Coordinators explained that several of these programmes were managed by ICDS which looked after health and

nutrition more than education. In such a circumstance, it could also be related to the financial status of the family.

Educational Environment at Home

	<i>RC</i>	<i>Arith</i>
Get Newspapers	-1.51	-0.62
Get Magazines	-1.59	-1.28
Books at Home	2.18**	2.02**
Reads Books	-0.22	-0.30
R	0.11	0.16

* $p < 0.1$, $p < 0.05$

'Books at Home', that seemed to contribute to some extent to achievement in school, may be reflecting the educational status and interests of the family. Negative signs of regression coefficients for 'Get Magazines', once again may be related to the money that the family had. In several States 'Reads Books' carried statistically significant regression coefficients; in Assam, only 2% children said they read something other than their textbooks frequently. The variable did not play any role in explaining the differences in achievement.

The three composite variables as obtained against Reading Comprehension and five others were regressed with achievement in Reading Comprehension and Arithmetic, separately. Increments in R^2 are given in the following table.

Table 3.13(a)

CONTRIBUTION OF PUPIL — RELATED VARIABLES
TO ACHIEVEMENT IN READING COMPREHENSION

<i>Variable</i>	<i>R</i>	<i>R²</i>	<i>Increment in R²</i>	<i>F</i>	<i>r</i>
Word Knowledge	.5093	.2594	.2594	690.49**	.51
Home Background	.5274	.2782	.0188	57.10**	.23
Similar Language	.5383	.2898	.0116	22.87*	-.13
Educ. Environ.	.5423	.2941	.0044	12.18**	.10
Age	.5448	.2968	.0027	7.49**	-.07
Time Watch TV	.5466	.2987	.0019	5.32*	-.06
Facilities for Learning	.5468	.2990	.0003	0.08	.06
Gender	.5468	.2990	.0000	-	.01*

** $p < 0.01$, * $p < 0.05$

Table 3.13 (b)CONTRIBUTION OF PUPIL — RELATED VARIABLES
TO ACHIEVEMENT IN ARITHMETIC

Variable	R	R ²	Increment in R ²	F	r
Word Knowledge	4872	2374	2374	604.13	.49
Home Background	5052	2552	0178	47.19	.22
Educational Environment	5150	2652	0100	26.78	.13
Facilities for Learning	5185	2688	0036	9.74	.10
Age	5214	2719	0030	8.24	-.08
Similar Language	5241	2747	0028	7.56	-.07
Time Watch TV	5253	2760	0013	8.54	-.04
Gender	5256	2762	0003	0.76	-.01

** $p < .01$

Word Knowledge, Home Background, Educational Environment at Home, Similarity of Language and Age made significant increments to R^2 in relation to both the criterion variables. Word Knowledge, the scores on which were used as a substitute for those on a test of intelligence made the maximum contribution to the total explained variance — 87% and 86%, respectively. A similar phenomenon had been observed in almost all the States. What was different in Assam was the significant increment to R^2 by Age. The two '1's were also significant. The spread of age in a single class could be high in Assam. Similarity of Language also turned out to be unimportant; two-thirds of the children reported their home language to be different from Assamese, the medium of instruction at school. The children who used Assamese at home could have an advantage in learning school tasks. The time spent by children in watching TV also seemed to get related to achievement in school. Only 20% children reported watching some television. Its indirect impact on learning language was hypothesised but data from several States pointed towards a relationship with achievement in arithmetic as well. The economic status of the family could be a variable in its background.

'Facilities for Learning at Home' made a significant contribution to the increment in R^2 for Arithmetic but not for Reading Comprehension. Arithmetic needs more specific learning as expressed in help with homework or availability of time for studies, while a language can be learnt more easily even in informal situations. Alternatively, its impact could have got subsumed in the two other composite variables that preceded it.

The total explained variance followed the most common pattern in its percentage being higher for Reading Comprehension in comparison to Arithmetic.

In Tables 3.13(a) and 3.13(b) the effect of the home background of the pupils as well as individual related variables, including an index of ability on the differences in the scores obtained by them on the two criterion variables, was studied. In Assam, the two R^2 's were moderate in value, being 30% and 28% with respect to Reading Comprehension and Arithmetic, respectively; both were higher than the country median of 27 and 18%. The difference was larger for Arithmetic.

Differences in pupil achievement could arise because of the impact and interaction of several variables. Schools could play probably a more significant role than the homes would. Lesser variation was expected in schools than in homes, the former being mainly administered by one or two agencies, while each home, like an individual, could be different from the others. But in spite of apparent standardisation, differences were observed even in the availability of facilities, not to speak of utilisation of the same.

It was noticed that the school means differed nearly as widely as the scores of the pupils. The standard deviation for the averages obtained from 216 schools was 7.2 scores in the test for Arithmetic as compared to 8.3 of the distribution of nearly 2,000 pupils¹².

All the school-related variables, excluding those providing information about teachers and the practices adopted by them in teaching, were regressed with pupil achievement.

Table 3.14(a)CONTRIBUTION OF SCHOOL-RELATED VARIABLES
TO ACHIEVEMENT IN READING COMPREHENSION

Variable	R	R ²	Increment in R ²	F	r
Proportion SC/ST	2891	0836	0836	15.32	-.29
Participation in Projects	3629	1317	0481	9.25	-.21
Admin. of School	4037	1630	0313	6.21	-.23
Teaching Exp. of Headmaster	4303	1852	0221	4.49	.21
Boys/Girls/Co-ed	4557	2076	0224	4.65	-.10
Operation	4757	2263	0187	3.94	.15
Blackboard Facilities for Teachers	4921	2421	0158	3.38	.11
Classes in School	5051	2551	0130	2.79	.08
Exp. as Headmaster	5152	2655	0104	2.27	-.04

 $p < .01$; $p < .05$

12 Both of these were higher than the respective country medians of 6.4 and 7.9.

Table 3.14(b)CONTRIBUTION OF SCHOOL-RELATED VARIABLES
TO ACHIEVEMENT IN ARITHMETIC

Variable	R	R ²	Increment in R ²	t	p
Proportion SC/ST	3558	1266	1266	24.35	- .36
Teaching	3949	1559	0293	5.80	.18
Exp as Headmaster	4234	1792	0233	4.71	- .07
No Detention Policy	4383	1921	0129	2.63	.15
Admn. of School	4526	2048	0127	2.62	- .21
Participation	4665	2176	0128	2.66	- .13
in Projects	4783	2288	0112	2.35	.11
Facilities for Teachers					
Boys/Girls/Co Ed	4869	2371	0083	1.75	- .07

P < .01, p < .05

Although all the thirty-one variables on which information was available from the School Questionnaire were entered in the regression analysis, only those and a few more down the line are listed in the tables given above, which contributed a statistically significant increment to R². The total contribution to R² was 34% for Reading Comprehension and 30% for Arithmetic; the small difference was in favour of the former, which was also higher than the median for all the States. The general picture was similar to the one obtained in Tables 13(a) and 13(b) except that the total R² obtained in Table 13(b) was much higher than the respective country median.

Two variables, namely, 'Proportion SC/ST' pupils and the total 'Teaching Experience of the Headmaster' contributed to differences in the average achievement of schools in both the subjects. The total SC/ST group was nearly 23% of the sample and its achievement was much lower than that of the 'Others'. If some schools had a concentration of these groups,¹³ their averages would differ. Both 't's were negative and had the highest values. The experience of the headmaster could make a difference by itself; it is also known that the teachers senior in service request for and get posted in schools with a reputation for and tradition of higher achievement. The children in some schools might be more homogeneous with respect to their socio-economic back-

ground, contributing to differences in the mean achievements of schools.

The other variables that made significant contributions to R² in relation to Reading Comprehension were 'Participation in Special Projects', 'Administration of the School', 'School Admitting both Boys and Girls' and 'Operation Blackboard'. The first variable, namely, participation in special projects, was expected to be positively correlated with school achievement. It was hypothesised that such participation would bring with it special orientation programmes for teachers, interaction with educationists and, in most cases, extra material to the school, which could result in better teaching. But both 't's were negative. This could not be explained easily. In the case of inadequate understanding of the new inputs in teaching or extra work required in some projects (for example, health-related projects), the traditionally expected learning could be affected adversely.

A significant contribution by the next two variables, namely, 'Administration of the School' and 'Boys/Girls/Co-educational', was very perplexing because of the highly limited apparent variation. Ninety-two per cent schools in the sample were managed by the State government, and all except three admitted both boys and girls. If the very small percentage of private schools or those managed by local bodies were different--say, in the opposite direction with regard to achievement--it could have contributed to this difference. The same can be said about the schools meant for either boys or girls only. The situation was difficult to comprehend.

'Operation Blackboard' brings with it more teachers as well as other learning material. It had been implemented in only one-third of the schools by early 1991. Both the 't's were positive--not very high.

In relation to Arithmetic, 'Experience as Headmaster' also made a significant contribution to R² but the negative direction of 't' made it difficult to interpret.

Differences related to school- and home-related variables looked very balanced in Assam. While it was easier to explain their contributions to the variance in Table 13(a) and 13(b), the same cannot be said about the two parts of Table 14.

13 Depending on their disproportionate distribution in various parts of the State

INTER CORRELATIONS OF PUPIL-RELATED VARIABLES AND ACHIEVEMENT

[illegible]

Table 3-B
INTER CORRELATIONS OF SCHOOL-RELATED VARIABLES AND ACHIEVEMENT

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
100	22	31	16	11	-18	-06	-09	09	13	20	12	-23	-07	-55	.05	-01	-02	-02	08	10	-02	18	04	.06	-08	15	08	-07	16	-.05	18	12	16	18	06	24	16	14
100	62	44	-07	-07	09	-05	-13	22	14	07	07	.05	-18	08	06	-01	20	21	06	-02	19	-08	02	-09	-00	05	05	04	-.03	06	01	09	12	-00	04	05	03	
100	54	-01	-14	03	-12	00	22	.06	.08	-03	-02	-13	16	01	03	16	22	11	-01	21	-12	01	-.04	09	04	09	04	04	-12	18	18	23	23	15	17	15	21	
100	15	-.01	05	-27	06	12	05	02	11	-01	-09	06	01	-.04	-01	04	.04	01	.02	05	01	-.11	-12	-08	-.04	02	-01	-07	-07	02	01	-11	-12	-08	-.04			
100	05	-04	-24	23	-.01	.00	-13	-17	09	-03	-33	-14	-19	-30	-16	07	08	-15	-05	-15	04	09	16	01	05	13	-.04	-02	08	-11	-10	-08	-.05	01				
100	03	-05	04	-12	01	-12	01	-12	20	-21	23	08	-05	-03	-06	05	07	-25	-12	01	-.06	0	-.26	-12	01	-.06	-02	-21	-23	-20	-28	-17	-26	-30	-25			
100	-12	-02	-06	-03	04	03	-05	01	02	-05	-.07	01	07	07	04	03	-09	02	02	01	00	07	-.08	-26	-07	-09	-11	-.05	01	-14	-14	-14	-10					
100	-08	-03	07	02	-03	-22	05	01	09	17	01	-06	-08	04	-03	09	22	05	-12	-15	-03	-06	12	03	08	04	-02	09	15	12	07							
100	16	-02	-06	.02	-03	09	-07	-12	-14	-01	-00	05	-22	-07	10	03	02	01	03	-09	19	05	-.02	.08	06	-.01	03	-.02	06	08								
100	10	06	01	-01	01	05	08	06	16	-05	07	-10	04	04	08	11	03	-07	-05	17	-.07	06	.14	15	14	17	11	14	15									
100	.05	-24	04	-26	-07	06	09	-14	-15	-05	-03	-03	04	23	-27	03	-05	02	21	-01	11	06	07	10	05	11	14	07										
100	-21	-03	-17	12	-04	04	10	-06	-05	-02	22	-07	-07	-08	-09	-19	10	08	-07	15	13	12	09	09	14													
100	04	25	11	18	-04	11	-08	-07	-02	-01	-11	05	12	-16	-08	-06	-.14	-05	-36	-29	-25	-25	-19	-32	-31	-29												
100	-16	-15	01	07	09	00	09	05	05	09	-.18	-14	12	09	-03	-02	03	-02	-06	-.03	-04	-14	-13	-06	-06													
100	17	17	01	09	-15	-01	-10	-17	01	-00	26	-07	-03	-02	-21	-00	-18	-08	-09	-15	-06	-17	-19	-01														
100	.70	12	23	-01	-03	-06	00	00	16	-12	-16	04	02	-.04	-02	04	05	-.06	01	01	00	05																
100	14	01	-09	-02	-01	01	01	09	14	-09	-08	07	06	06	-07	-02	04	-06	-02	-03	-01	-00																
100	10	07	01	01	09	14	-09	-08	11	01	-21	-12	01	00	-01	-08	-01	-04	01	-09	-03																	
100	42	-11	-05	-02	17	09	-02	10	02	-07	05	.00	11	13	06	20	17	15	18	11																		
100	09	03	20	10	00	-11	10	08	12	08	03	11	01	01	18	10	13	10	09																			
100	05	08	-06	09	-06	05	05	16	10	-03	-05	03	00	-00	01	-12	-08	02																				
100	-09	-08	-05	-07	07	06	03	08	04	-06	03	01	-07	01	03	-02	-02																					
100	-10	-05	-06	-03	01	15	11	-15	15	16	07	22	04	12	14																							
100	07	-02	05	06	-09	-08	05	00	-03	04	04	-02	07	-05	-01																							
100	02	-02	-04	-11	04	-07	-03	03	-02	01	-00	05	-03	02																								
100	-05	-08	02	-13	-05	-10	-03	00	-07	02	-05	-08	-02																									
100	87	-02	01	02	16	12	14	22	14	22	14	20	19	14																								
100	03	00	20	01	-02	01	07	06	08	07	-01																											
100	14	.02	10	15	14	10	08	06	06	15																												
100	-04	09	07	10	04	05	10	07																														
100	-13	-21	-16	-14	-10	-14	02	-21																														
100	75	67	62	60	67	66	77																															
100	-6	62	70	72	59	98																																
100	50	54	63	59	88																																	
100	62	60	-60	62																																		
100	58	57	69																																			
100	70	73																																				
100	62																																					
100																																						

Bihar

As per the number of children in the primary sections in the State in relation to the enrolment in the country, the tests were to be administered to 5,500 children of Class IV in the State of Bihar. The pupils were to be selected from 310 schools identified from Patna, the capital city, and from the rest of the three regions in which the State was divided. The State returned data for only 3,385 pupils from 318 schools, pointing out a big difference between enrolment and attendance. On an average, 18 children were expected in Class IV in a school, but only 10.6 children (per school) responded to the tests¹.

Table 4.1

SAMPLES PLANNED AND ENTERED IN ANALYSES

Region	No of Schools		No of Pupils	
Capital City	10 ²		250	
		14 ³		116
Northern (Vaishali, Madhubani)	110	109	1966	1249
Central (Nalanda, Bhagalpur)	118	103	2118	1002
Southern (Godda, Lohardugga)	72	92	1240	1018
Total	310		5574	
		318 ⁴		3385

The maximum shortfall was from Patna and the central region where the districts of Nalanda and Bhagalpur provided the sample. According to the enrolment statistics, an average of 33 children were expected in Class IV in the urban area but the city of Patna provided only 8.3 children⁵. As the maximum number of pupils to be tested was restricted to 25, the expected average could become lower than the maximum of 25, but what was obtained

was one-third only. The central region, too, provided only 47% of pupil sample from 87% of the schools visited, 13%⁶ more schools had to be visited in the southern region to make up 82% of the expected sample of pupils. The region that contributed the highest proportion of the sample had the lowest over-all mean. In contrast, central Bihar, which contributed only 46% of the sample expected from it, had the highest mean. Together, they would pull down the State mean considerably which was, nevertheless, very high when compared to other States.

Another check regarding the representativeness of the sample vis-a-vis the population from which it was selected was carried out by comparing some of the obtained statistics with those reported in the Fifth All India Survey of Education conducted by the NCERT in 1986.

Table 4.2

SAMPLE AS COMPARED TO THE POPULATION

Variable	Percentage	
	1986 Survey	Sample in the Study
Primary (only) Schools	81.2	88.2 ⁷
Girl Students	33.2	33.1 ⁸
Scheduled Caste Students	12.2	12.9 ⁸
Scheduled Tribe Students	8.5	12.1 ⁸
Women Teachers	17.5	18.6 ⁹
Trained Teachers	93.4	93.4 ⁷

There were no differences in the statistics pertaining to the percentage of girl students and trained teachers in primary schools in the State. Small increments in the number of women teachers (1.1%) and SC students (7%) could be due to the changing conditions and the special

1 The headmasters of these schools reported 85% average attendance.

2 The number planned

3 The number entered in the analyses

4 The State returned data from 325 schools, of these, seven were eliminated after the initial scrutiny. Data from 12 more schools were dropped from the analyses, based on responses to the School Questionnaire.

5 The State Coordinator commented: "This was due to the communal tension prevailing at that time in the area. Most of the schools in the sample had Muslim pupils who were absent during this period."

6 Additional lists of schools were provided in all States to make up for the shortfall in the expected number of pupils.

Source

7 School Questionnaire

8 Pupil Questionnaire

9 Teacher Questionnaire

drive to recruit more women teachers, particularly in accordance with the National Policy of Education announced in 1986. In several States, the percentage of women teachers had risen far more sharply during this period. An increment of 3.5% for Scheduled Tribes pupils was considered to be in the expected direction.

There were more primary schools in the sample than their proportion reported in the 1986 survey. A part of the increase could be due to further expansion of primary education, 4.6% of the schools reported to have been opened in the last six years only. Nevertheless, the sample was somewhat different from the population on this variable. All other differences could be ignored.

The Tests in the State

The State participated in the try-out of the material. It did not have to translate the tests as the same were originally developed in Hindi, the language which was the medium of instruction in the State. The tests proved very easy; the median pass percentage on the items in all the tests was 70% or above. Only 17 out of a total of 207 items had the pass percentage less than 49.5%.¹⁰

Table 4.3

DIFFICULTY VALUES OF ITEMS

Pass Percentage	Arith	RC(P)	RC(S)	W,K	A W	S S	Spell
0 - 9	-	1					
10 - 19	-	-					
20 - 29	-	1					1
30 - 39	2	-	1		4		1
40 - 49	-	3	-		3		-
50 - 59	5	3	-		1		3
60 - 69	10	8	2	15	4		5
70 - 79	16	21	10	19	9	14	14
80 - 89	7	7	3	6	3	4	1
Median	71.4	72.4	74.5	72.1	69.5	75.9	71.3

The Groups in the Study

The Pupils

Ninety per cent of the total sample of 3,385 pupils belonged to the rural areas, the percentage matched well with 91% of the schools being in those areas. Thirty-three per cent were girls, the Scheduled Castes and Scheduled Tribes pupils were 13% and 12%, respectively. Another 47% belonged to Other Backward Classes. The average age of the children was 10.4 years.

Thirty-eight per cent fathers and 67% mothers of this group were illiterate, and another 23% fathers and 19% mothers had studied only up to the primary level. Only 7% fathers and 1.5% mothers had studied beyond the senior secondary school. Sixty per cent children belonged to farmers' families, 12% of fathers were unskilled workers. Five per cent children classified their father's occupation under 'others' which could include those unemployed as well. On the other side, 6% fathers were professionals and another 20% held high-salaried jobs.¹¹ Only 12% children came from small families having one or two children, 41% belonged to families with four or more children.

The percentage of children who spoke some language other than Hindi at home was a high 60%.¹² Pre-school education had been available to only 9.5% children. Forty-seven per cent children helped their families for two or more hours every day. Forty-five per cent also reported receiving help from their families in doing their homework, and 49% had some place at home where they could sit and study.

Only 56% children said they could attend school most of the days, 7% had to miss it frequently, and the remaining 37% had to absent themselves occasionally. Approximately 35% children reported having most of the textbooks or other study material; a fairly large percentage (22%) had few of either of these.

A newspaper was received in 14% of the homes, and magazines in 13%. 60% families had no books at home but 42% children read something in addition to their textbooks. Only 14% children watched television, of these, 6% watched it for more than one hour a day.

As a group, the children from Bihar did not come from a socio-economic-educational home background that would facilitate learning. A large percentage of parents were either illiterate or the recipients of a very low level

10 The position of Bihar in the selection tests for admission to the Navodaya Vidyalayas had also been in the first quartile (or very close to it) with the sixth and third the rank *vis-a-vis* 20 common States participating both in the NVS selection tests and this project.

11 'High salary' could have been interpreted subjectively by the pupils and also by the teachers who were requested to help them fill in the questionnaire.

12 The children probably spoke some dialect (such as Bhojpuri or Maithili Bajjicka, Magodhi, etc.) at home. This has been confirmed by the State.

of school education. The families were large. A substantial percentage could not attend school regularly. All the textbooks, etc., were not available to the majority of the children.

The Teachers

The responses of 434 teachers teaching primary classes were available; of these 89% were from rural areas. Only 19% were women; the proportion of women teachers was one of the lowest in Bihar. The majority of teachers, i.e., 65% teachers, were in the age range of 35-50 years, 67% had been teaching for 10 or more years. Only 18% were relatively new to the job having been in teaching for less than five years.

Seventy-one per cent teachers had studied up to either the secondary or the higher secondary level, 26% were graduates and only 3% were non-matriculants. Professional education for two years seemed the most prevalent practice (88%), the B.Ed. degree was reported only by 4%. Some in-service education had been received by 65% of the teachers. While nearly 90% reported working in rural areas, not all of them seemed to live in the village they worked in, only 30% reported less than a half-hour of time required to travel to and from school. Twenty-eight per cent needed 1-2 hours for this purpose, while 17% travelled for more than two hours every day.

Only 37% teachers reported having their own copies of the textbooks, with another 5.5% having library copies, the remaining 58% borrowed them from the pupils, probably on the spot. Thirty-nine per cent had their own copies of the dictionary, while 34% had no access to it.

A mere six per cent teachers reported adopting innovative practices, but 90% used material other than textbooks in teaching. A fairly large 71% developed some of this material, with 64% involving even pupils in this activity. Most of the teachers (93.5%) conducted 2-3 evaluations in a year; only 4% evaluated their pupils every month. On the other extreme were 3% teachers who carried out evaluation only once a year. Seventy-four per cent of the teachers used evaluation for improving teaching or helping children to learn better. Nearly all teachers reported checking homework regularly or sometimes. Only 5% teachers asked parents to arrange extra tuition for the children who were weak in studies, the rest extended this help themselves.

The environment in the classroom looked quite permissive with 80% teacher reporting that the students asked questions quite often.

Teachers in primary schools in Bihar were reasonably well qualified and experienced. Several of them lived at some distance from school. Textbooks were not available to many of them; they also kept to traditional ways of teaching and evaluating.

The Headmasters

The following remarks about the headmasters are based on data available from 306 School Questionnaires. As in the case of teachers, the majority of headmasters (77%) had two years of professional education suitable for teaching primary school children, only 8.5% had a B.Ed. degree; a negligible 2.3% were untrained.

The headmasters were all mature, 91% being older than 35 years. Only 9% had taught for less than five years, while 20% had been headmasters for less than five years, a large percentage (58%) had worked in this capacity for more than 10 years.

The Schools

Of the 306 schools, 91% were in rural areas, 99% were managed by the government; only 1% were private aided. With the exception of seven schools, all other were co-educational. Of these seven, four were exclusively for girls and three for boys. Eighty-eight per cent of the schools were up to the primary level only; another 11% had Classes I to VIII, and only one school, having Classes I to X/XII, formed part of this sample. Most of the schools (71.2%) had been in existence for more than 20 years only, 9.3% could be considered being freshly started, i.e., in the last one decade only. Thirty-two per cent schools had pre-primary classes.

Seven per cent schools had a separate room for the headmaster and another 3% for the teachers. Availability of space for pupils was also quite inadequate—0.4 room per class group. Drinking-water was provided in 30% schools, separate urinals for girls were available in only 4% of the schools.

A negligible 1.6% schools had Book Banks. On the average, 3 teachers were shared by 5 class groups. Nearly two-thirds of the schools did not respond to the question regarding 'No Detention Policy'; another 22% said it did not exist. The non-respondents could be detaining students who did not reach a certain level of achievement, the cumulative percentage would thus become 87%. Nine per cent schools reported retaining pupils up to Class IV regardless of their achievements.¹³ The retention rate of Class IV on the basis of enrolment was 40% of the intake.

¹³The State Coordinator wrote: "No detention policy" at primary stage has been accepted by the Department of Human Resource Development, Bihar. However, some schools may be following the system of detaining the unsuccessful pupils in the same class for improving levels of learning.

in Class I.¹⁴ Operation Blackboard had not touched 81% of the schools. Seventy-five per cent schools reported having a PTA, and meetings—one or more in a year—were reported by 70% of them.

Achievements of Pupils

Data obtained from 3,372¹⁵ pupils have been summarised below

Table 4.4

ACHIEVEMENTS OF PUPILS

Tests	Arith (40) ¹⁶	RC(P) (44)	RC(S) (16)	W K (40)	A W (24)	S S (18)	Spell (25)	Total (207)
Mean	27.8	29.9	11.4	28.8	15.1	13.9	16.6	143.5
SD	9.4	10.1	4.3	10.9	5.0	4.6	6.6	
Mean as Percentage	69.5	67.9	71.2	72.0	62.9	77.2	66.4	69.3
K R—20	0.93	0.94	0.89	0.96	0.84	0.90	0.92	
All India	41.2	45.4	43.1	49.5	41.7	57.8 ¹⁷	42.8 ¹⁷	45.2
Median as Percentage								

When compared with other States the achievements of pupils were very high. As all the distributions of scores of pupils were negatively skewed, the achievements were higher than indicated by the mean values. A relatively low score on 'Appropriate word' and 'Reading Comprehension (Sentences)' has been noticed in other States as well. The type of item in both the tests was common.

All the States were requested to administer the battery of tests to a small sample of pupils of Class V who were to be selected from some of the schools in the sample. The subsample of schools was to be selected in a balanced manner on the basis of judgement. In the State of Bihar, instead of the next higher grade the sample was taken from one grade lower for administrative reasons.

The tests were administered to the pupils when they had already taken their Class IV examination as the school year in Bihar ends in December and not in March/April as in many other States. Therefore the main group was already in Class V, (the beginning months). As the primary schools has only Classes I to V, it was not possible to administer tests to the students of Class VI without going to a different set of schools. The data nevertheless

served the purpose. There is a big difference in the aggregate mean scores of pupils of Classes III and IV. It is not only the highest among all the States; the mean achievement of pupils of Class III¹⁸ is higher than the average achievement of the pupils of Class IV in any other State.

Table 4.5

MEAN ACHIEVEMENTS OF PUPILS — CLASSES III AND IV

Class	Arith	RC(P)	RC(S)	W K	A W	S S	Spell	Total
III ¹⁹ (302)	25.0	27.3	10.6	24.4	14.3	12.6	13.8	128.0
IV (3372)	27.8	29.9	11.4	28.8	15.1	13.9	16.6	143.5

Students of Class IV achieved higher than those of Class III on each of the seven tests, adding to a difference of 16 points in the aggregate.

As the stage of sampling, each State was divided into several regions in the first instance. This step was taken keeping two things in mind: firstly, to ensure proper representation of the schools from all parts of the State, and secondly, to study the differences in the levels of achievement of pupils, if any, over the regions.

Table 4.6

ACHIEVEMENTS OF PUPILS — REGION-WISE

Region ²⁰	Arith	RC(P)	RC(S)	W K	A W	S.S.	Spell	Total
Capital								
City	Mean 26.5	30.1	11.8	28.0	15.9	13.9	16.0	142.2
	SD (115)							
	9.3	8.2	3.7	10.4	4.7	4.6	6.0	
Northern								
Region	Mean 28.1	30.2	11.3	29.2	15.1	14.1	16.3	144.3
	SD (1249)							
	10.0	10.5	4.9	11.4	4.9	4.8	7.2	
Central								
Region	Mean 29.7	32.6	12.4	31.8	15.9	14.8	18.5	155.7
	SD (1002)							
	7.6	8.1	3.1	8.8	3.9	3.5	4.9	
Southern								
Region	Mean 25.8	26.9	10.5	25.4	14.4	12.7	15.2	130.9
	SD (1004)							
	9.8	10.8	4.4	11.2	5.9	5.1	6.9	

The two regions that differed significantly from the State average were the central region with a higher score and the Southern region with a lower average. The pro-

14 The Fifth All India Survey

15 The data of 13 pupils from two schools had to be dropped because of errors in recording

16 The maximum possible score

17 The Tripura is excluded. The content of the tests was not common in all the States

18 Going by the obtained pupil/school ratio, this sample was likely to have been obtained from at least 30 schools

19 Data from 109 schools

20 The total number of pupils in the four regions is 3,370, as data for 15 pupils was dropped for confused recording on this variable

portion of the obtained pupil sample (against the number expected) was much lower for the high-achieving region. Thus the actual State mean could be much higher. The mean scores of the capital city of Patna and the northern region were nearly the same and were also close to the State average.

The achievements of pupils on two tests, namely, Arithmetic and Reading Comprehension (Paia), were studied objective-wise, and in the case of Arithmetic topic-wise also.

Table 4.7

ACHIEVEMENT IN ARITHMETIC — OBJECTIVE-WISE

Objective	Mean	SD	Mean as Percentage
Knowledge (19) ²¹	13.1	4.5	68.9
Understanding (12)	8.2	3.0	68.3
Application (9)	6.5	2.5	72.2
Total (40)	27.8	9.4	69.5

No difference between the percentage mean scores on items classified under Knowledge and Understanding had been noticed in other States also, but a relatively higher (or even equal) percentage mean score on Application items was noticed only in Bihar. It was difficult to understand.

Table 4.8

ACHIEVEMENT IN ARITHMETIC — TOPIC-WISE

Topic	Mean	SD	Mean as Percentage
Time (3)	2.2	0.9	73.3
Factors and Multiples (7)	4.6	1.9	65.7
Fundamental Operations (12)	8.6	3.1	71.7
Weights and Measures (3)	2.1	0.9	70.0
Fractions (5)	3.3	1.6	66.0
Decimals (7)	4.5	1.8	69.3
Unitary method and Others (3)	2.5	0.8	83.3
Total (40)	27.8	9.4	69.5

The pattern of percentage score over topics was quite similar to that obtained elsewhere, with Unitary method and Time having the highest scores, followed by Fundamental Operations and Weights and Measures. Decimals had the lowest percentage score but that is only in relative terms, otherwise it was quite high.

Table 4.9ACHIEVEMENT IN READING COMPREHENSION
OBJECTIVE-WISE

Objective	Mean	SD	Mean as Percentage
Noting Detail (17)	12.9	4.1	75.9
Simple Comprehension ²² (13)	9.2	3.6	70.8
Inference ²³ (14)	7.8	3.1	55.7
Total (44)	29.9	10.1	67.9

The proportionate scores on the three objectives were in the expected direction. As the over-all score in Bihar was very high, score percentages on the three objectives were also high. Seventy-six per cent average on Noting Details should be considered very satisfactory.

The average scores of pupils when divided over location, gender and caste were studied to understand the differences between these groups, if any.

Table 4.10

DIFFERENCES IN ACHIEVEMENT — LOCATION-WISE

Test	Location	Mean	SD	<i>t</i>
Arith	U	22.6	10.4	10.7
	R	28.4	9.1	
RC(P)	U	27.1	10.7	5.28
	R	30.2	10.0	
RC(S)	U	10.6	4.3	3.81
	R	11.5	4.3	
W.K.	U	25.4	11.2	5.95
	R	29.2	10.8	
A.W.	U	13.7	5.7	5.66
	R	15.3	4.9	
S.S.	U	13.1	5.2	3.34
	R	14.0	4.6	
Spelling	U	14.9	6.2	4.88
	R	16.8	6.6	
RC(total)	U	37.8	14.3	4.90
	R	41.7	13.6	
T(5 + 6 + 7)	U	41.7	14.0	5.39
	R	46.1	14.0	

Urban - 321 Rural - 3051

^{*} $p < 0.1$

Children from rural areas in Bihar achieved higher than their counterparts from urban areas in all the seven tests; all the differences were statistically significant. The aggregate score of 145.4 of rural children was substantially higher than the 127.4 of the urban children. The proportion of the sample of rural children in the sample was 90% against 88% expected on the basis of the enrolment statistics of 1986, which should be considered satisfactory.

²¹ The maximum possible score

²² This includes, (a) deriving meaning of difficult words from the context, and (b) relating things at a simple level

²³ This includes identifying the message or the central idea and the title of the write-up

Table 4.11

DIFFERENCES IN ACHIEVEMENT — GENDER-WISE

Test	Gender	Mean	SD	t
Arith.	B	28.1	9.4	1.98
	G	27.4	9.6	
RC(P)	B	30.1	10.1	1.57
	G	29.5	10.2	
RC(S)	B	11.4	4.2	0.79
	G	11.3	4.5	
W.K	B	29.8	10.7	2.96
	G	28.0	11.1	
A.W	B	15.1	5.0	0.12
	G	15.1	4.9	
S.S	B	13.9	4.6	0.26
	G	13.9	4.7	
Spelling	B	16.6	6.6	0.54
	G	16.7	6.6	
RC (Total)	B	41.6	13.7	1.41
	G	40.9	13.8	
T(5+6+7)	B	45.6	11.0	0.30
	G	45.8	14.1	

Boys - 2257, Girls - 1115

p < 0.05, p < 0.1

Unlike over location, the differences between boys and girls were negligible. The boys scored somewhat higher than the girls on several tests but only two of these differences, namely, Arithmetic and Word Knowledge, were statistically significant, but these were not very substantial. The aggregate scores were 144.4 and 142.0, respectively. The differences were in line with the general prejudices in the society. In Bihar, the percentage of girls (33%) was amongst the lowest.

Table 4.12

DIFFERENCES IN ACHIEVEMENT — CASTE-WISE

Test	Group	Mean	SD	F
Arith.	SC	27.4	9.5	32.20*
	ST	27.8	9.7	
	BC	28.4	8.9	
	Others	28.8	9.6	
RC(P)	SC	30.2	9.6	26.91*
	ST	25.8	10.8	
	BC	30.5	9.5	
	Others	30.6	10.0	
RC(S)	SC	11.5	4.2	19.38*
	ST	9.9	4.4	
	BC	11.6	4.1	

24 The percentage of ST children in the sample was somewhat higher than the ratio obtained for the enrolment in Classes I- V in the 1986 Survey (This sample - 12%, the 1986 Survey-8.5%)

Test	Group	Mean	SD	F
W.K	Others	11.6	4.5	28.29*
	SC	28.9	10.5	
	ST	24.3	10.9	
	BC	29.3	10.7	
A.W	Others	29.9	10.7	20.49
	SC	15.0	5.2	
	ST	13.5	5.4	
	BC	15.3	4.8	
S.S	Others	15.7	4.8	42.61
	SC	13.8	4.5	
	ST	11.6	5.2	
	BC	14.2	4.5	
Spelling	Others	14.5	5.3	19.53
	SC	17.0	6.2	
	ST	14.3	6.8	
	BC	16.8	6.4	
RC (total)	Others	17.1	6.8	27.28*
	SC	41.7	13.3	
	ST	35.7	14.6	
	BC	42.1	13.3	
T (5 + 6 + 7)	Others	42.3	13.7	33.38*
	SC	45.9	14.0	
	ST	39.4	13.4	
	BC	46.3	13.6	
	Others	47.3	13.6	

SC - 437, ST - 410, BC - 1591, Others - 934

p < 0.1

Differences among caste groups were also persistent over the tests, but less dramatic than the ones over the rural/ urban divide. On the basis of aggregate score, the groups in the descending order could be placed as 'Others' — 148.2; Backward Classes — 146.1, Scheduled Castes — 143.8, and Scheduled Tribes — 123.2; the former three were close together with ST falling out with a low score.²⁴

Factors Related to Pupil Achievement

Data regarding the home background of the pupils, and other variables such as gender, age, caste, etc., collected with the help of a questionnaire, was regressed against two criteria, namely, scores on Reading Comprehension (total) and Arithmetic. Before this analysis, data on several variables were combined in three background variables, namely, Home Background, Facilities for Learning and Educational Environment at Home.

The regression coefficients of the final equations obtained for the three composite variables are given on the next page.

Home Background

	<i>RC</i>	<i>Arith</i>
Location	3.91"	5.81
Father's Occupation	0.36	0.08
Caste	0.91	0.80
Father's Education	0.71"	0.60'
Mother's Education	-0.85'	-0.50
Number of Siblings	-0.32	-0.36
R	0.14	0.23

$p < .05$, $p < .01$

'Location, Caste and Parents' Education' had significant regression coefficients in the composite score for Home Background, i.e., they played a noticeable role in explaining some of the differences in achievement. 'Father's Occupation' was relatively less important. Significant caste differences were noticed in mean achievement on all the tests in Table 4.13. The signs of regression coefficients in relation to the two criterion variables were consistent but the reason for coefficients for 'Father's Education' and 'Mother's Education' having different signs was not understood, both were statistically significant.

Facilities for Learning

	<i>RC</i>	<i>Arith</i>
Attended Pre-School	-6.86'	-2.06'
Place for Study	-1.26	-0.60
Help in Home Work	-1.13	-0.72'
Availability of Textbooks	0.90	0.85
Availability of Study Material	-0.45	-0.29
Helping Household	2.86	1.29"
Regularity in Attendance	0.48	0.21
R	0.25	0.14

$p < .05$, $p < .01$

The variables more influential in increasing R were 'Attending Pre-School' (only 9.5% reported attending any), receiving 'Help in Homework', 'Availability of Textbooks' and having to 'Help the Household' with domestic work or in earn-a-living-related tasks. In Bihar, the availability of textbooks seemed an important variable as only 34% children said they had most of them and 23% had only a few of them. Nearly 47% children had to help their families for two or more hours every day.

As in the case of 'Home Background', signs of regression coefficients with respect to both the criterion variables were consistent, lending confidence for the role of the variables.

Educational Environment at Home

	<i>RC</i>	<i>Arith</i>
Get Newspaper	-3.92"	-1.93
Get Magazines	-5.37'	-3.13'
Books at Home	-0.47	0.73
Reads Books	2.90'	1.52
R	0.21	0.17

$p < .01$

With the exception of 'Books at Home', all other variables tended to contribute towards the home environment that had some relationship with children's achievement in school.

The three composite variables, as obtained against Reading Comprehension, and five others were regressed with achievement in Reading Comprehension and Arithmetic separately, the increments in R^2 are given in the following tables.

Table 4.13 (a)

CONTRIBUTION OF PUPIL-RELATED VARIABLES TO ACHIEVEMENT IN READING COMPREHENSION

Variable	<i>R</i>	<i>R</i> ²	Increment in <i>R</i> ²	<i>F</i>	<i>t</i>
Word Knowledge	.6867	.4716	.4716	3007.7'	.69
Facilities for Learning	.6945	.4824	.0108	702.83	.22
Educational Environment	.6976	.4866	.0042	27.80	.20
Age	.6993	.4890	.0023	13.41'	-.07
Similar language	.6997	.4896	.0007	4.47	-.01
Time Watch TV	.6998	.4898	.0001	0.94	-.07
Gender	.6999	.4899	.0001	-	-.02
Home Background	.6999	.4899	.0000	-	.14

$p < .05$, $p < .01$

Table 4.13 (b)

CONTRIBUTION OF PUPIL-RELATED VARIABLES TO ACHIEVEMENT IN ARITHMETIC

Variable	<i>R</i>	<i>R</i> ²	Increment in <i>R</i> ²	<i>F</i>	<i>t</i>
Word Knowledge	.6208	.3853	.3853	2112.79'	.62
Home Background	.6296	.3965	.0111	62.08'	.20
Educational Environment	.6309	.3981	.0016	9.07	.14
Similar language	.6313	.3986	.0005	3.03	-.03
Facilities for Learning	.6314	.3987	.0001	0.33	.13
Time Watch TV	.6314	.3987	.0000	-	-.04
Gender	.6315	.3987	.0000	-	-.03
Age	.6315	.3987	.0000	-	-.02

$N = 3372$

$p < .01$

Scores on the test on Word Knowledge were used as a measure of pupil ability which, in turn, appeared to be

the most significant variable contributing to differences in achievement 'Educational Environment at Home' and 'Similarity of Language' spoken in the family with the medium of instruction at school were the two variables which contributed significantly to R^2 . The former had positive significant r 's (0.20, 0.14) as well, but the values of t 's for the latter with the criterion variable were negative and very low. 'Facilities for Learning' also seemed important, though it did not make a significant addition to R^2 . Arithmetic, 'Home Background' and 'Facilities for Learning' changed places against the two criteria, the t 's were not too small. Interdependence of the three home background variables was indicated.

The total explainable variance due to pupil related variables was on the high side—49% for Reading Comprehension and 40% for Arithmetic. Of course, most of it was associated with pupil ability (i.e., scores on Word Knowledge). The likely reason could be restricted variability on family background-related variables.

The relationship of 'Home Background' variables with achievements of pupils was studied in Tables 4.13 (a) and 4.13 (b). The R^2 for Reading Comprehension was the highest among 23 States, and the one for Arithmetic lower only to that in Meghalaya. There, obviously, were large differences in the physical or motivational environment of the homes in the State. A similar exercise studying the influence of school-related variables was also undertaken in which the information available about the background and experience of the headmasters along with the policies and practices followed in schools was regressed against achievement on the two criterion variables. Teacher-related variables were not used in this analysis.

The school means differed from each other nearly as much as the scores obtained by the pupils. The standard deviation of the distribution of 316 school means for the test of arithmetic was 8.0, as compared to 9.4 of the 3,385 pupils. Both the values were smaller only to the corresponding statistics in Uttar Pradesh.

Although all the 31 variables given in the list at the end of the report were regressed with the two criteria, in the two tables given above, only those which contributed statistically significant increment to R^2 and a few more down the line were retained. The total contribution to R^2 for Reading Comprehension was 18.6%, and for Arithmetic it was 21.9%. It was much lower than the median values for the country. When compared with R^2 values obtained with respect to differences among pupils, it could be said that the variation due to school-related variables was much smaller than differences related to the home background. Apparent similarity of schools could be seen in the brief write-up under 'The Schools' in this report. Nearly all schools were managed

by the government, 88% were primary schools, and a large 71% had been in existence for more than 20 years. Longer existence under the same management was more likely to introduce some level of uniformity in the practices followed by the schools.

Table 4.14 (a)

CONTRIBUTION OF SCHOOL-RELATED VARIABLES TO ACHIEVEMENT IN READING COMPREHENSION

Variable	R	R^2	Increment in R^2	F	t
Operation Blackboard	.1516	.0230	.0230	8.01	17
Total Enrolment	.2379	.0566	.0236	7.07	-13
Classes in School	.2837	.0805	.0239	6.71	-11
Years of Existence of School	.3134	.0982	.0177	5.02	14
PTA	.3370	.1136	.0154	4.43	14
Pre-primary Classes	.3557	.1265	.0129	3.74	10
Time Given (Maths)	.3720	.1384	.0119	3.50	13
Financial Freedom to the Headmaster	.3826	.1464	.0080	2.37	12
No Detention Policy	.3919	.1536	.0072	2.14	-08

$p < .05$, $p < .01$

Table 4.14 (b)

CONTRIBUTION OF SCHOOL-RELATED VARIABLES TO ACHIEVEMENT IN ARITHMETIC

Variable	R	R^2	Increment in R^2	F	t
Years of Existence of School	.2061	.0425	.0425	11.51**	21
PTA	.2857	.0816	.0391	10.99**	20
Total Enrolment	.3336	.1113	.0297	8.58**	-18
Location of School	.3655	.1336	.0233	6.58*	.19
Classes in School	.3951	.1561	.0225	6.80*	-.09
Financial Freedom to the Headmaster	.4166	.1736	.0175	5.37*	.15
No Detention Policy	.4268	.1822	.0086	2.68	-.03

* $P < .05$, ** $P < .01$

While pupil-background-related variables explained more variance in Reading Comprehension as compared to Arithmetic, the position was reversed in the analysis with respect to school-related variables. It was along the expected line; it had been said earlier that learning in arithmetic was considered more specific to what went on in school, while language was being learnt both in school and outside it.

Four variables made a significant contribution to R^2 , both in relation to Reading Comprehension and Arithmetic, these were 'Total Enrolment of the School', 'Classes in School', 'Years of Existence' and 'PTA'.

Although the average number of pupils who responded to the tests in a school was less than 11, there could be large differences in enrolment in the schools. It had a negative ' t ' with both the criterion variables. That

the 'Classes in School', i.e., whether the school was primary, middle or secondary, made a difference to the school mean came as a surprise. Eighty-eight per cent of the schools in the sample reported to have only Classes I to V; the students of primary schools could be achieving much lower, as was indicated by the negative signs of both 't's, than the small percentage of middle and secondary schools, for the difference to become significant.

Schools that had been in existence for a longer duration produced better results. The availability of basic facilities could improve over the years, more parents in the neighbourhood were likely to be educated as the school could already be catering to the second or next generation of learners. It would be particularly true of schools in rural areas. In urban areas, senior/better teachers manage postings in well-established schools.

PTAs were found influential in several States. Both the 't's were positive, the one with Arithmetic was higher.

In addition to the four common variables, Operation Blackboard made significant contribution to Reading Comprehension but not to Arithmetic. It was likely that teaching of arithmetic remained confined to the textbook, but availability of additional material made a difference to learning in language. Up to 1991, the OB scheme had been implemented only in 19% schools of the sample from Bihar. Location also made difference to achievement in arithmetic.

The 'No-Detention Policy' made a small but consistent contribution to achievement in school.

Once again, the variation arising out of differences in the home background of the pupils was larger than that which could be attributed to differences due to school-related variables.

INTER CORRELATIONS OF PUPIL-RELATED VARIABLES AND ACHIEVEMENT

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32		
1	1	00	02	-04	-05	.02	-07	-12	-07	-10	-04	-06	-11	-09	-07	01	-09	-07	-15	-05	-12	-21	18	09	06	-10	10	06	08	08	59	10	06
2		100	-02	07	-01	-02	00	-17	-07	-01	-11	-10	-10	-08	-06	-06	-03	-02	-05	-05	-02	-05	-06	-08	-02	-05	-07	-06	-07	-04	-03	-01	
3			100	-04	08	-01	-03	11	07	08	00	06	-00	00	02	04	05	04	-02	02	02	-03	-03	-01	-05	-00	01	011	-02	02	02	-03	
4				100	-14	-01	-03	-24	-17	-04	-10	-14	-10	-13	-08	-11	-08	-07	-12	-06	-04	-02	02	02	03	02	-01	03	02	-14	-01	06	
5				100	03	04	24	20	-01	07	11	06	10	08	09	12	12	13	14	12	13	07	06	08	08	11	05	07	46	01	-07		
6					100	07	07	02	-01	.12	08	04	05	07	07	00	03	-03	-04	.03	-03	-02	-01	03	-01	03	-00	-01	-00	-03	-04		
7						100	09	12	-03	15	18	08	08	00	03	26	23	18	11	17	-07	-13	-19	-15	-12	-15	-17	-16	-01	-67	-22		
8							100	43	03	21	29	23	22	16	15	18	19	25	26	21	09	06	03	08	04	.09	06	05	38	01	-08		
9								100	-03	16	22	14	16	07	14	21	21	25	16	16	-02	-03	-05	-02	-01	01	-04	-04	-23	-06	-15		
10									100	03	04	02	03	-08	-09	-00	-00	-01	02	01	-03	-02	-01	-05	-01	-02	-01	-02	-12	-05	01		
11										100	36	31	28	06	13	23	20	21	17	16	-03	-05	-09	-05	-01	-02	-05	-06	-00	-27	-16		
12											100	.35	33	15	19	25	24	22	20	19	-03	-05	-03	-05	-02	-01	-05	-05	00	-21	-18		
13												100	59	17	27	20	19	21	17	15	05	04	-00	-02	01	02	-05	03	01	11	-14		
14													100	23	30	18	18	20	18	17	02	02	-02	-01	-00	02	-04	00	01	04	-11		
15														100	29	00	-01	-01	07	00	10	14	14	10	08	12	05	15	09	63	03		
16															100	13	10	10	14	04	04	05	04	04	02	06	05	05	-02	22	-07		
17																100	51	31	20	27	-09	-13	-17	-13	-13	-11	-13	-15	-01	-21	-69		
18																	100	30	21	26	-11	-14	-20	-14	-12	-12	-11	-17	-04	-19	-75		
19																		100	38	26	04	-04	-08	-02	-02	-01	-07	-05	-02	-16	-24		
20																			100	26	08	06	05	06	08	10	07	06	04	-07	27		
21																				100	-04	-06	-09	-06	-06	-02	-05	-07	-04	-15	-17		
22																				100	72	59	.62	63	65	57	72	20	13	14			
23																					100	76	68	68	.71	62	98	14	20	18			
24																						100	58	.62	64	58	88	10	24	23			
25																							100	62	64	61	69	16	18	17			
26																								100	67	57	70	13	13	17			
27																									100	66	73	.13	18	18			
28																										100	64	13	15	16			
29																											100	14	22	20			
30																												100	.15	12			
31																													100	26			
32																														100			

Table 4-B

INTER CORRELATIONS OF SCHOOL-RELATED VARIABLES AND ACHIEVEMENT

[illegible]

Gujarat

In proportion to the ratio of children enrolled in Class IV as compared to the all-India statistics, the State of Gujarat was to collect data from nearly 5,800 pupils from approximately 250 schools. The sample was further divided over five regions, including the capital city of Gandhi Nagar. The State returned data for 4,729 pupils from 242 schools. However, the data from as many as 25 schools and 122 pupils were eliminated due to one reason or the other.¹ Further details are given in table 5.1.

Table 5.1

SAMPLES PLANNED AND ENTERED IN ANALYSES

Region	No. of Schools	No. of Pupils
Gandhi Nagar	7 ¹	175
Bhavnagar	48	1261
Ahmedabad	87	1984
	75	1571
Panch Mahal	60	1341
	55	1190
Valsad	47	1055
	34	706
Total	249	5816
	217	4598

Eighty-one per cent of the expected number of the pupil sample was obtained from 97% of the schools, which was considered very satisfactory as the original estimates were planned expecting some shortfall generally noticed in attendance and enrolment.

The maximum loss was from Valsad, and the minimum from Panch Mahal. It may be mentioned that region 4, namely, Panch Mahal, had the highest aggregate score, the mean score from Valsad was not very low either.

Gujarat, however, did not test children of Class IV only, which was the target population. Seventy-two per cent of the sample was from Class V. However, when

the achievements of children from classes IV and V were compared, the two groups appeared to be samples from the same population.

Table 5.2

MEAN ACHIEVEMENT OF CHILDREN--CLASSES IV AND V

Class	Arith	RC(P)	RC(S)	W K	A W	S S	Spell	Total
IV (1039) ¹	20.8	24.6	8.8	21.6	11.3	12.0	11.9	111.0
V (3681)	19.2	23.9	8.4	22.2	11.8	12.8	12.8	111.1

The data were merged and treated as one group. The analyses that follow are based on the combined sample of children of Classes IV and V.

In Table 5.1, the rough check on the representativeness of the sample was based on its expected and obtained distribution over the regions. Another check is presented in Table 5.3, wherein some of the statistics obtained from the sample in the study are compared with those obtained in 1986 in the Fifth All India Educational Survey conducted by the NCERT.

Table 5.3

SAMPLE AS COMPARED THE POPULATION

Variable	Percentage	
	1986 Survey	Sample in the study
Primary (only) Schools	45.3	24.0 ⁵
Girl Students	43.2	43.0 ⁶
Scheduled Castes Students	9.3	15.5 ⁶
Scheduled Tribes Students	14.5	24.7 ⁶
Women Teachers	39.0	41.6 ⁷
Trained Teachers	99.0	94.6 ⁶

There was a substantial deviation in percentage of 'primary schools only'. Nearly 70% of the schools in the sample were middle schools. This needs to be seen in light of the fact presented in Table 5.2, wherein 72% of

¹ High non-response to tests or zero standard deviations of the test scores were two major reasons.

² The number planned.

³ The number entered in the analyses.

⁴ The number before data from some of the schools was discarded.

Source

⁵ The School Questionnaire.

⁶ The Pupil Questionnaire.

⁷ The Teacher Questionnaire.

the sample came from Class V in spite of the population of the study having been defined as children who had studied up to Class IV only. The State reported only 12 schools from the list of schools selected for the sample where tests were not administered. It is likely that a large number of schools had been upgraded.⁸ Even the 1986 statistic of 45% schools only being the primary schools was much lower than the percentage in most States.

There was negligible difference between the two percentages for the girl students. However, there were sharp increments in the percentage of pupils belonging to SC and ST groups. As the drive for recruitment of SC and ST students continuously goes on, the increase, though larger than in any other State, was in the expected direction. An increase of 2.6% for women teachers was also in the expected direction, particularly in light of the education policy of 1986 wherein recruitment of women teachers in primary schools was emphasised. This very factor might have led to lowering of the percentage of trained teachers in the State, i.e., if more women teachers, even if untrained, had been recruited.

The sample, when compared to the 1986 survey, was somewhat different. On the face of it, all the differences were not to its advantage. While an increase in the number of middle schools and women teachers could have had a positive impact on average achievement, the same could not be said for the increase in SC/ST pupils or the reduction in the percentage of trained teachers at least by *a priori* notions such as exist in the society.

The Tests in Gujarat

The tests were translated in Gujarati from the Hindi version supplied. Gujarati being quite similar to Hindi, with a large overlapping vocabulary, little difficulty was experienced by the State. Gujarat even adopted major parts of the tests on Sentence Structure and Spelling. The State had also participated in the try-out, thus gaining the advantage of influencing the final selection of items to suit its levels as well as improving on its own translations. The tests proved quite easy for Gujarat.

Two-thirds of the items of the total battery had pass percentages of 49.5% and above. For the most difficult test, namely Arithmetic, the items balanced evenly around the 50% pass percentage. The test in Sentence Structure became too easy.

The tests could also discriminate well between pupils, the median value of Discrimination Indices varied between 53.0 to 72.7.

Table 5.4

DIFFICULTY VALUES OF ITEMS

Pass	Percentage	Arith	RC(P)	RC(S)	W K	A W	S S	Spell
0 - 9			1			1		
10 - 19		2	1	1		—		
20 - 29		4	—	1		2		2
30 - 39		5	5	1		4		1
40 - 49		9	7	2	11	3		6
50 - 59		9	11	3	19	7	1	10
60 - 69		6	13	7	7	7	5	6
70 - 79		4	6	1	3		12	
80 - 89		1						
Median		49.5	56.8	59.5	54.2	52.5	72.0	53.0

On the whole, the tests were somewhat easy for Gujarat, this could not be said about a large number of States.

The Groups in the Study

The Pupils

The combined data of 4,598 pupils of Classes IV and V have been summarised below. Only 57% of the pupils were from the rural area,⁹ 43% were girls, the percentages for Scheduled Castes, Scheduled Tribes, Backward Classes and 'Others' were 15.5%, 25.9%, and 51%, respectively. The average age of the pupils was 10.5 years.

Forty-eight per cent children came from families where the fathers were farmers, 8% of the fathers were either unskilled workers or were unemployed.¹⁰ On the other side, 14% were either professionals or held high-salaried jobs. This percentage was quite large as compared to some other States, (so was the proportion of private schools in the sample). Frequently, the high-income groups prefer to send their children to private schools rather than to those managed by the government, including local bodies. Thirty-four per cent of the fathers and 51% mothers were illiterate, with another 36% fathers and 29% mothers having studied only up to Class V. Approximately 5% of both the parents had gone to college. A relatively large group of 30% children came from small families having one or two children.¹¹

Thirty-six per cent of the children had attended pre-school; 21.5% spoke some language other than Gujarati at home. Eighty-seven per cent had most of the textbooks and 77% said they got sufficient quantity of other material such as notebooks, etc. The percentages report-

8 This was confirmed by the State.

9 The percentage of enrolment in Classes I to V in rural areas as reported in the Fifth All India Educational Survey, with 30 September 1986 as the reference date, was 69%.

10 It could also include unspecified work.

11 Gujarat is one of the five States which has implemented the family planning programme more successfully.

ing inadequate availability was 3% for books and 6% for other material.

A moderate 28% helped the family with domestic/or occupation-related work for two or more hours every day.

Forty-one per cent children had some place at home where they could sit and study, 54% reported receiving help in doing their homework, 71% children could attend school most of the days.

A newspaper was received in 36.5% of the homes and magazines in 33%. Thirty-six per cent of the homes had some books and 67% children read something other than their textbooks. Sixty-one per cent children did not watch any television, 17% watched it for more than an hour every day.

The characteristics of the sample of pupils from Gujarat that need to be kept in mind were: (i) it was a group comprising children of Classes IV and V and even though there was no difference between the achievements of the children of these two classes, it meant inclusion of more schools with Classes I to VIII (69.4%), (ii) the SC/ST group was 40% of the total population, this phenomenon, too, did not affect pupil achievement adversely; (iii) the proportion of professionals or high-salaried fathers was on the high side.

The Teachers

Four hundred and fifty-four teachers responded to the questionnaire meant to elicit information about the background of the teachers, 61% were working in rural areas and 42% were women. More than 50% of the teachers were young, being 35 years or less in age, 77% had taught for less than 10 years, and the percentage that had taught for more than 20 years was a modest 9.6% only.

There were 10% teachers who had not studied up to Class X, 16% were graduates, the rest of them were equally divided over the secondary or higher secondary level of education. Eleven per cent had a B.Ed degree (one or four years), six per cent teachers ticked the response 'other' and 5% omitted to answer the question; the non-respondents could be untrained. The headmasters had also reported 5.4% teachers as untrained. Sixty-two per cent had received some in-service education. Two-thirds of the teachers lived very near their schools, with another 20% having to spend less than an hour to travel to and from school, only a small 4% had to spend more than two hours for this purpose.

Most of the teachers in Gujarat (71%) had copies of the textbooks from the library¹², 25% had their own books,

and a very small 3.3% borrowed them from the students. Only 18% teachers reported non-availability of a Gujarati language dictionary, the rest had either their own copy or access to it in the library. The average number of books in the library was also on the high side but this has to be seen in light of the fact of a majority of the schools being middle schools with primary sections.

In spite of being well equipped in terms of education and training, only 14% teachers reported adopting new teaching practices; the majority expressed the opinion that using innovative practices would improve the interest and learning of the pupils. Most of the teachers reported using material other than textbooks for teaching, 88% had developed some of it themselves and 57% had even involved their pupils in developing it.

Nearly all (97%) teachers said they checked pupils' homework regularly, with 2% doing it sometimes. Eighty-eight per cent teachers helped weak students by paying them special attention in the class, 12% did not answer this question -- they probably just ignored them. Sixty-two per cent teachers carried out monthly evaluations, only one per cent did it once a year, the rest followed the traditional practice of 2-3 times a year. Twenty-two per cent did not put it to multipurpose use such as identifying weaknesses in teaching, learning and promotion.

The classrooms of 79% teachers were quite permissive in that pupils often asked questions.

Teachers in Gujarat tended to be young in age and experience. They were professionally well off, with in-service education and availability of basic material, but remained somewhat conservative in the choice of methods of teaching.

The Headmasters

The data regarding background of headmasters and conditions in schools have been summarised from 242¹³ School Questionnaires returned by the schools. Fifty per cent of the headmasters had received two years of professional education designed for preparing primary school teachers; 35% had had a one-year course, 8% were B.Eds, and another 6% were untrained. More than half of them were older than 50 years, and 15% were younger than 35 years. Associated with age was teaching experience of more than 15 years for 78% of them; only 6% had taught for less than five years but 32% had been headmasters for less than five years.

The Schools

Sixty-four per cent of the schools in the sample were in rural areas. The figure deviated substantially from the

12 A Book Bank existed in only 14% of the schools.

13 Ultimately, the pupil data were retained from a smaller number of schools.

1986 statistics of 84% of primary sections being in rural areas. Eighty-four per cent of these schools were co-educational, 8% each being for boys or girls only.

The percentage of private schools was also high (17.4%) with another 2.3% being private aided. Only 24% of the schools in the sample were primary schools with Classes I-IV, more than two-thirds were middle schools having Classes I to VIII and the rest were secondary or senior secondary schools. Seventy-four per cent of the schools had been in existence for more than 20 years; only 2% were newly established.

Regarding physical facilities, 43% of the headmasters had a separate room as their office, but a room for the teachers was available only in 23% of the schools. The facility of drinking water was provided by 76% of schools, and toilets for girls by 50%.

Only 17% schools had pre-primary classes; Book Banks existed in 14%. For reasons not known, a very large percentage of headmasters (71%) omitted to respond to the question on 'No Detention Policy'. It is possible that these schools did not follow the announced policy of the government but did not want to admit it. Nine per cent said they could fail pupils from Class I itself.

As a large proportion of schools in this sample were middle schools, they seemed better equipped than the typical primary school in several parts of the country.

Achievements of Pupils

The achievement of 4,598 pupils of Classes IV and V on the seven tests of the battery were analysed (See Table 5.5).

Table 5.5

ACHIEVEMENTS OF PUPILS

Test	Arith (40) ¹⁴	RC(P) (44)	RC(S) (16)	W.K. (40)	A.W. (24)	S.S. (18)	Spell (25)	Total (207)
Mean (4598)	19.8	24.3	8.6	22.3	11.8	12.7	12.8	112.3 ¹⁵
SD	8.3	9.8	4.3	10.0	4.8	4.8	6.9	
Mean as percentage	49.5	55.2	53.7	55.7	49.2	70.5	51.2	54.2
K.R. — 20	89	92	86	93	80	89	91	
All-India Median as percentage	41.2	45.4	43.1	49.5	41.7	57.8 ¹⁶	42.8 ¹⁶	45.2

The achievements of the pupils in Gujarat were one of the highest when compared with other States. The average score even in Arithmetic was close to 50%, and the one in Sentence Structure as high as 70%. All the reliability coefficients were on the high side.

It was easier to understand the absence of difference between the mean achievements of pupils of Class IV and V when the scores obtained were low as the same could be attributed to rather low levels of teaching in the schools. It became more difficult to interpret 'no difference' between the two class groups when the mean achievement of Class IV was at the expected level. Why did not the students do better after another year of teaching?

The achievements of students were also studied region-wise.

Table 5.6

ACHIEVEMENTS OF PUPILS — REGION-WISE

Region	Arith	RC(P)	RC(S)	W.K.	A.W.	S.S.	Spell	Total
Gandhi Nagar (144)	Mean SD	15.8 4.5	22.7 8.1	6.7 3.4	19.2 8.7	11.1 3.9	13.0 4.6	99.3 5.6
Bhavnagar (987)	Mean SD	17.7 8.8	22.0 10.8	7.7 4.7	18.6 10.9	10.4 5.1	10.8 5.2	97.2 6.5
Ahmedabad (1571)	Mean SD	19.3 8.2	24.7 9.3	8.6 3.9	23.4 9.4	12.5 4.6	13.3 4.6	115.3 6.8
Panch Mahal (1190)	Mean SD	22.2 8.4	26.4 10.0	9.5 4.3	24.1 9.5	12.4 4.8	13.1 4.7	121.2 6.8
Valsad (706)	Mean SD	20.4 7.0	23.5 8.8	8.6 4.3	22.6 9.2	11.6 4.3	13.6 4.2	114.6 7.2

¹⁴ The numbers in the parentheses give the maximum possible score.

¹⁵ The score is different from that in Table 5.2 because of elimination of the data of 122 pupils.

¹⁶ Tripura is excluded. The content of the tests was not common in all States.

There were significant differences among the regions. The pupils in Panchmahal scored 12% more than in Bhavnagar which had the lowest aggregate. The capital, Gandhinagar, was very close with an average of 99.3 (48%). It may be mentioned that the achievements in capital cities in several States were lower than in other districts. Ahmedabad and Valsad were comparable. The differences in Arithmetic were high, with Gandhinagar achieving the lowest, the situation was nearly the same for Spelling, with Bhavnagar joining the capital city, the scores on Sentence Structure were about the same in four of the five regions.

The two high-achieving regions, namely, Panch Mahal and Ahmedabad districts, also contributed 60% of the total sample, pushing up the averages for the State.

The achievements of children on two tests, viz., Arithmetic and Reading Comprehension (paragraph), were also studied objective-wise, and in case of Arithmetic, topic-wise too. The same are summarised in Tables 5.7 to 5.9.

Table 5.7

ACHIEVEMENT IN ARITHMETIC — OBJECTIVE-WISE

Objective	Mean	SD	Mean as Percentage
Knowledge (19) ¹⁷	9.7	3.9	51.0
Understanding (12)	6.1	2.9	50.8
Application (9)	4.0	2.3	44.4
Total (40)	19.8	8.3	49.5

A lower achievement in items involving application of knowledge was in the expected direction, 44.4% score on this objective was considered an acceptable level of achievement.

Table 5.8

ACHIEVEMENT IN ARITHMETIC — TOPIC-WISE

Topic	Mean	SD	Mean as Percentage
Time (3)	1.6	1.1	53.3
Factors and Multiples (7)	3.2	1.7	45.7
Fundamental Operations (12)	5.7	3.0	47.5
Weights and Measures (3)	1.3	.9	43.3
Fractions (5)	1.9	1.14	38.0
Decimals (7)	4.0	1.8	57.1
Unitary Method and Others (3)	2.0	.9	66.6
Total (40)	19.8	8.3	49.5

The two questions in Unitary Method and a question on Line Segments have had the highest percentage mean in nearly all the States. A low mean in fractions could not be explained away easily. The fractions are introduced in Class III in many States but the children's grasp

remained poor. The worst hit were Fundamental Operations which the children start learning from Class II, a low score in the very basics of arithmetic was somewhat disconcerting. Weights and Measures, which were close to the daily experience of the children, too, had a low percentage. Compared to these, both Decimals and Time had a higher mean percentage. Could this be due to recency in time of learning?

Table 5.9

ACHIEVEMENT IN READING COMPREHENSION (PARA) — OBJECTIVE-WISE

Objective	Mean	SD	Mean as Percentage
Noting Detail (17)	10.7	4.2	62.9
Simple Comprehension ¹⁸ (13)	7.6	3.4	58.5
Inference ¹⁹ (14)	6.1	3.1	43.6
Total (44)	24.3	9.8	55.2

The differences in the mean achievements on the three objectives were in the expected direction. Drawing inference is a higher level skill which, probably, was still being learnt by the pupils. Compared to some other States, a 63% score in absorbing information, etc., communicated directly through the printed word was very satisfactory. Considering the possibility of a chance score in the multiple choice questions, approximately 12% of the pupils in this sample could be said to be non-readers.²⁰

The differences in the achievements of pupils when divided over location, gender and caste were also studied. The relevant statistics are presented in the following tables.

Table 5.10

DIFFERENCES IN ACHIEVEMENT — LOCATION-WISE

Test	Location	Mean	SD	t
Arithmetic	U	17.8	7.5	13.99
	R	21.2	8.6	
RC(P)	U	22.9	8.9	8.32
	R	25.3	10.4	
RC(S)	U	8.1	3.9	6.46
	R	8.9	4.6	
W.K.	U	21.6	9.3	4.19
	R	22.8	10.4	
A.W.	U	11.7	4.7	1.16
	R	11.9	4.9	
S.S.	U	12.7	4.7	0.56
	R	12.8	4.9	
Spelling	U	12.3	6.7	4.31
	R	13.1	7.0	
RC (total)	U	31.0	11.6	8.33
	R	34.3	14.0	
T (5 + 6 + 7)	U	36.7	13.7	2.67
	R	37.8	14.7	

Urban - 1981 Rural - 2617

¹⁷ p < .01

¹⁷ The maximum possible scores.

¹⁸ This includes (a) deriving the meanings of difficult words from the context, and (b) relating things at a simple level.

¹⁹ This includes identifying the message or the central idea and the title of the passage.

²⁰ This is somewhat lower than the similar percentage in arithmetic.

The differences in the mean scores of all the seven tests were in favour of rural children, 5 out of 7 being statistically significant. Their aggregate score of 116.1 was 9 points higher than those of urban children. It is likely that in urban areas, the children of families with higher motivation for high achievement went to English-medium schools. The direction of the differences was in line with the differences over the regions (Table 5.6) wherein the total average score in the capital city was only the second lowest and lower by 22 scores from that of the district with the highest mean.

Table 5.11

DIFFERENCES IN ACHIEVEMENT -- GENDER-WISE

Test	Gender	Mean	SD	t
Arithmetic	B	20.0	8.4	2.18
	G	19.5	8.2	
RC(P)	B	23.9	10.0	3.27*
	G	24.8	9.5	
RC(S)	B	8.5	4.3	1.28
	G	8.7	4.2	
W.K.	B	22.4	9.8	1.30
	G	22.1	10.1	
A.W.	B	11.7	4.8	1.40
	G	11.9	4.8	
S.S.	B	12.5	4.9	4.19
	G	13.1	4.6	
Spelling	B	12.4	7.0	3.82*
	G	13.2	6.7	
RC (total)	B	32.4	13.3	2.86*
	G	33.5	12.8	
T (5 + 6 + 7)	B	36.6	14.6	3.75
	G	38.2	13.8	

Boys - 2623, Girls - 1975

p < 0.05, * p < 0.01

The differences between boys and girls were low and on the traditional lines, with boys doing somewhat better than the girls in the test in arithmetic and the girls doing better in tests in language. Even though some of the differences were statistically significant, the same were not very large. The girls had an average of 113.3 as compared to 111.4 of the boys on the total battery.

Scheduled Tribes children were 25% of the sample; the deviation of this group from the 1986 statistics has already been commented upon. They also achieved significantly higher when compared to other groups; the trend was persistent over all the tests. Scheduled Caste children, also a higher percentage as compared to the 1986 statistics, achieved the lowest. The highest aggregate score of 117.7 was achieved by ST pupils, followed by 111.6, 109.8 and 107.2 by 'Others', Backward Classes

and Scheduled Caste groups, respectively.

Factors Related to Pupil Achievement

As stated in the introductory remarks, several pupil-related variables were combined in three composite variables before carrying out the regression analysis for studying the contribution of these variables to differences in achievement.

Table 5.12

DIFFERENCES IN ACHIEVEMENT -- CASTE-WISE

Test	Group	Mean	SD	t
Arithmetic	SC	18.4	8.5	18.51*
	ST	21.2	8.3	
	BC	20.1	9.9	
	Others	19.4	7.8	
RC(P)	SC	23.2	9.8	6.96
	ST	25.3	10.0	
	BC	23.9	10.8	
	Others	24.2	9.5	
RC(S)	SC	8.2	4.2	6.36
	ST	9.0	4.5	
	BC	8.7	4.4	
	Others	8.4	4.2	
W.K.	SC	21.3	10.3	11.17
	ST	23.7	10.1	
	BC	21.2	10.1	
	Others	22.1	9.7	
A.W.	SC	11.5	4.8	4.67*
	ST	12.2	4.8	
	BC	11.5	4.9	
	Others	11.8	4.7	
S.S.	SC	12.2	5.0	8.15*
	ST	12.9	4.7	
	BC	12.0	4.9	
	Others	12.9	4.8	
Spelling	SC	12.4	6.9	3.38*
	ST	13.3	7.2	
	BC	12.4	6.9	
	Others	12.7	6.7	
RC (Total)	SC	31.4	13.1	7.44
	ST	34.3	13.4	
	BC	32.7	14.2	
	Others	32.7	12.8	
T (5 + 6 + 7)	SC	36.1	14.6	5.57*
	ST	38.5	14.5	
	BC	35.8	14.3	
	Others	37.4	14.0	

SC - 714, ST - 1135, BC - 418, Others - 2331

* p < 0.01

The regression coefficients for the variables entered in for the three composite variables are given below

Home Background

	RC	Arith
Location	4.74	3.95
Father's Occupation	-42*	-28*
Caste	-18	-01
Father's Education	65	29*
Mother's Education	88	20
Number of Siblings	-06	-28
R	20	23

$p < 0.1$

'Location', 'Father's Occupation' and 'Education' contributed significantly in maximising the correlation with the criterion variables. In addition 'Mother's Education' also affected this relationship with RC, 'Size of the Family' did not contribute beyond the variables already mentioned.²¹

Facilities for Achievement

	RC	Arith
Attended Pre-School	-1.66	-1.17
Place for Study	96	-60*
Help in Homework	-1.67	-1.47*
Avail. of Textbooks	40	27
Avail. of Study Material	-15	-73
Helping Household	-27	09
Regularity in Attendance	1.03	72*
R	10	15

$p < 0.5$, $p < 0.1$

Considering both the criteria together, 'Availability of Textbooks' and 'Helping Household' did not contribute significantly towards explaining the differences in achievement. The reasons may be different; there was small variation in availability of textbooks. On the other hand, the time spent in helping the family with its domestic or occupation-related work might make little difference to this young age-group who did not require too much time for self-study. Availability of Notebooks contributed towards relationship in arithmetic but not in language.

Educational Environment at Home

	RC	Arith
Get Newspaper	-1.96*	-1.40
Get Magazines	-0.25	-1.09
Books at Home	0.44	0.43
Reads Books	1.37**	0.33

* $p < 0.1$

Getting a newspaper as also magazines to some extent influenced the correlation between the educational environment at home and achievement at school. Reading something other than textbooks also bore some relationship with achievement in language.

It was noticeable that the values of R with the three pupil-background variables remained low in general, their relationship with achievement in arithmetic tended to be somewhat stronger than with language.

The three composite variables and five others were regressed with achievement in Reading Comprehension and Arithmetic separately. The increment in R^2 as obtained by step-wise regression analysis for both the criterion variables are given below.

Table 5.13 (a)

CONTRIBUTION OF PUPIL-RELATED VARIABLES TO ACHIEVEMENT IN READING COMPREHENSION

Variables	R	R ²	Increment in R ²	F	r
Word Knowledge	.5880	.3458	.3458	2429.07	.59
Home Background	.5983	.3579	.0121	86.92*	.20
Similar Language	.6011	.3613	.0034	24.72**	.07
Gender	.6034	.3641	.0028	20.16*	.04
Educ. Environ.	.6051	.3661	.0020	14.28*	.08
Facilities for Achievement	.6061	.3673	.0012	8.82	.09
Time Watch TV	.6066	.3680	.0006	4.63*	-.01
Age	.6067	.3681	.0001	0.91	-.02

* $p < 0.5$, ** $p < 0.1$

Table 5.13 (b)

CONTRIBUTION OF PUPIL-RELATED VARIABLES TO ACHIEVEMENTS IN ARITHMETIC

Variables	R	R ²	Increment in R ²	F	r
Word Knowledge	.5374	.2888	.2888	1866.82**	.54
Home Background	.5508	.3034	.0145	95.77*	.20
Time Watch TV	.5590	.3124	.0091	60.66*	.00
Educ. Environ.	.5611	.3148	.0024	15.92*	-.08
Facilities for Achievement	.5622	.3161	.0013	8.64*	.10
Age	.5628	.3167	.0006	4.17*	-.02
Gender	.5632	.3172	.0005	3.22	-.03
Similar language	.5633	.3173	.0001	0.58	.02

* $p < 0.5$, ** $p < 0.1$

²¹The differences between the mean achievements of the caste groups were quite significant but the same got lost here probably in 'Location' and 'Father's Occupation'.

In Gujarat, values of R^2 in relation to either of the dependent variables were higher than in most other States but the relationships were in line with those observed elsewhere. The difference in ability, as represented by scores on Word Knowledge, was the most significant contribution to differences in achievement with 'Home Background', 'Facilities for Achievement', 'Educational Environment at Home' and 'Time Watch TV' contributing further to the differences. For the rest of the variables, the picture was not very clear. 'Gender' and 'Similarity of Language' contributed significantly to R^2 in relation to Reading Comprehension. In Gujarat, 21.5% children reported their home language to be other than Gujarati. Age made some difference to achievement in arithmetic. Unlike the picture in other States, the time spent on watching TV had a negative correlation with achievement in Arithmetic, with Reading Comprehension 't' was not significant. Age also correlated negatively, as in some other States, and so did gender, in relation to Arithmetic.

A higher R for Reading Comprehension as compared to Arithmetic is noticed in most of the States.

In Tables 5.13 (a) and 5.13(b), the relationship of such variables as could be different for individual pupils with their achievement in school was analysed. In Gujarat, a strong impact of nearly all the variables was observed on achievement in both Reading Comprehension and Arithmetic. The total contribution of 37% and 32% to R^2 were higher than the respective country medians of 27% and 18%. The difference was larger for Arithmetic.

Differences in pupil achievement could be attributable to the impact and interplay of several variables. Family background and personal ability was one part of it, the schools, in particular, would play a more powerful role in communities where a fairly large percentage of parents were illiterate.

In Gujarat, as in most other States, the school mean varied nearly as widely as the scores of the pupils. The standard deviation of the averages obtained from 317 schools for the test in arithmetic was 7.7 as compared to the 8.3 of the distribution of scores of nearly 4600 pupils.²² Apart from schools being genuinely different from each other, an unexpectedly large standard deviation of the school means could arise because of the small samples from schools. In general, the number of pupils was not small in most schools from Gujarat. The schools could be catering to more homogeneous groups, giving rise to differences in mean achievement.

All the school-related variables were regressed with pupil achievement in the two criterion variables as specified earlier.

Table 5.14 (a)

CONTRIBUTION OF SCHOOL-RELATED VARIABLES TO ACHIEVEMENT IN READING COMPREHENSION

Variables	R	R^2	Increment in R	t	p
Location of School	1881	0.551	0.454	6.61	19
Classes in School	2282	0.521	0.167	3.17	10
Age of the Headmaster	2700	0.729	0.208	1.02	12
Percentage Attendance	2956	0.871	0.115	2.81	18
Total Enrolment	3131	0.982	0.108	2.12	01
Years of Existence of School	3332	1.110	0.128	2.53	03

$p < 0.5$

Table 5.14 (b)

CONTRIBUTION OF SCHOOL-RELATED VARIABLES TO ACHIEVEMENT IN ARITHMETIC

Variables	R	R^2	Increment in R	t	p
Location of School	2567	0.659	0.659	12.78	26
Classes in School	3015	0.927	0.268	5.31	12
Percentage Attendance	3271	1.070	0.113	2.87	18

$p < 0.5$, $p < 0.1$

Although all the thirty independent variables, on which information was available from the School Questionnaire were entered in the regression analysis, only those (and a few more down the line) are listed in the tables given above, which contributed a statistically significant increment to R^2 . The total contribution (by all the variables) to R^2 was 20% for Reading Comprehension and 22% for Arithmetic; both the percentages were lower than the respective median values for all States. Between the two variables in Tables 13(a) and 13(b), more variance was explained for Reading Comprehension than for Arithmetic; the situation reversed in Tables 14(a) and 14(b). The values of R^2 were nearly the same.

The two variables that consistently made significant contributions to R^2 in relation to both the criteria were 'Location of the School' and 'Classes in School'. Differences in the achievements of pupils when classified under these two variables were noticed earlier. Children in rural areas achieved higher, the difference was probably due to a sieved-out urban group where children from the higher socio-economic (and perhaps also ability) group could be going to high-fee-charging English-medium schools. In the absence of frequent availability of such schools in rural areas, the groups remained intact.

22. Both of these were higher than the country medians of 6.4 and 7.9, respectively.

Differences in the average achievement of children from primary (only) and of those studying in the primary sections of middle and secondary schools were also seen. The average aggregate scores of children from these three types of schools were 104.0, 114.3 and 116.0, respectively. It is likely that middle and secondary schools were better equipped. The percentages of these schools, being 24%, 66% and 10% respectively, were sufficiently large to produce enough variation between schools.

'Age of the Headmaster' contributed a significant addition to R^2 in Table 5.14(a). The negative sign of 'r' indicated the older headmasters obtaining somewhat poorer learning of their wards in language. Could they

be paying insufficient attention to the learning of language?

'Percentage Attendance' made a small but consistent addition to differences in relation to both the criteria but the negative signs of 'r' were very perplexing. If some schools had a large number of pupils enrolled, who really did not attend classes, this type of situation could arise.

Home-related variables seemed to play a more significant role in differences in achievement of pupils than the school-related ones. The latter could get reduced in case a large number of high-fee-charging English-medium schools were also functioning, these were not included in this sample.

INTER CORRELATIONS OF PUPIL-RELATED VARIABLES AND ACHIEVEMENT

[illegible]

Table 5-B

[illegible]

Haryana

An approximate sample of 2,400 pupils was planned to be selected from 106 schools identified in four regions and in the city of Ambala in Haryana. The capital city had been included as a region in each State. The seat of the governments of Punjab, Haryana and the Union Territory of Chandigarh all being in Chandigarh, it was decided to exclude it as the capital city of either Punjab or Haryana and include instead the next largest city in each of these States. The State of Haryana returned data for 1,956 pupils from 109 schools. Of these, 202 students were from Class V. The data of Class V pupils were used only for studying the gain in learning in the two subjects over a year. The data from four schools was dropped as the standard deviations were very low, pointing to a possibility of copying. Another school was dropped from the regression analysis. The number of schools and pupils from which data were retained for analyses are given in Table 6.1

Table 6.1

SAMPLES PLANNED AND ENTERED IN ANALYSES

Region	No. of Schools		No. of Pupils	
Ambala City	2 ¹	3 ²	50 ³	37
Rohtak	16	15	325	286
Hissar	24	23	525	455
Ambala District	22	27	675	511
Gurgaon	42	37	850	439
Total	106	105	2425	1728

The data from nearly as many schools as were expected in the sample were retained for analyses but the sample of pupils fell short by nearly 30%. A 25% shortfall in the number of pupils, on the average, was expected due to discrepancy between enrolment and atten-

dance. (In Haryana, the average attendance as obtained from the data supplied by the headmasters was 88%.) The maximum shortfall of pupil sample was from Gurgaon -- 52% -- obtained from 88% of the sample of schools. The minimum loss was from Rohtak with 88% of the pupil sample having become available from 94% of the selected schools.

How representative was this sample of the population of pupils, teachers and schools in the State? Some of the statistics obtained were compared with those available from the Fifth All India Educational Survey conducted by NCERT in 1986.

Table 6.2

SAMPLE AS COMPARED TO THE POPULATION

Variable	Percentages	
	1986 Survey	The Sample in the Study
Primary (only) schools	62.1	86.7 ⁴
Girl Students	41.3	42.8 ⁵
Scheduled Castes Students	21.2	24.2 ⁵
Scheduled Tribes Students	0.0	2.3 ⁵
Women Teachers	41.3	48.5 ⁶
Trained Teachers	99.5	98.5 ⁴

There were two deviations from the 1986 statistics which pointed to the difference between the sample and the population. The proportion of primary schools in the sample was very large compared to their percentage in 1986. It is likely that rapid extension of the educational facility as part of the drive for universalisation of primary (elementary) education resulted in many more schools being opened during this interval. More than 41% of the schools reported being in existence for less than six years only. Nevertheless, there was a higher representation of primary schools in the sample. The percentage of trained teachers was slightly lower -- 1% only in 1991. Generally, one expected it to be higher. A possible reason could be the recruitment of more women teachers,

1 The number planned

2 The number entered in the analyses

3 The number of pupils planned were estimates based on average enrolment

Source

4 The School Questionnaire

5 The Pupil Questionnaire

6 The Teacher Questionnaire

including untrained ones, in accordance with the directive of the policy of education of 1986 which recommended at least two teachers in every primary school, one of whom preferably was to be a woman. It was partly supported by an increase of 7% women teachers.

Along with a fairly substantial increase in the percentage of women teachers, the percentages of girls, SC and ST pupils all increased, but these increments, being in the expected direction, were not considered as indicators of non-representativeness of the sample.

The Tests in Haryana

Tests originally developed in Hindi were used as such in Haryana; Hindi being the medium of instruction in the state no changes were necessary. The data available from the item analysis conducted on the responses by the final sample of students of Class IV throw light on the suitability of the tests for the State.

Table 6.3

DIFFICULTY VALUES OF ITEMS

Pass Percentage	Arith	RC(P)	RC(S)	WK	AW	SS	Spell
10 - 19		1					
20 - 29	4	1			1		3
30 - 39	9	4		2	3		6
40 - 49	10	16	7	22	7	2	8
50 - 59	9	16	7	12	8	10	7
60 - 69	5	7	1	4	5	6	1
70 - 79	2	—	1	1	—		
80 - 89	1	—	—	—	—		
Median	46.5	50.1	50.7	17.7	50.7	57.5	43.9

Only one item in Reading Comprehension where the pupils were asked to identify the most suitable title for a brief write-up proved to be too difficult. For all the tests together, the difficulty values were evenly distributed around 50%.

Except for five items in the total battery of 207 where Discrimination Indices were less than 20, the same were fairly satisfactory. The median values varied between 62.6 to 77.3.

The Groups in the Study

The Pupils

Of the 1,728 pupils, 76% were from rural areas, 43% were girls. The group comprised 24% children from Scheduled Castes, 2% from Scheduled Tribes and 14% from other Backward Classes. Nearly 30% of the children were first-generation learners as their parents were illiterate.

The fathers of 46% of the children were illiterate or had not studied beyond Class V, for mothers, the percentage was as high as 61%. On the other side, 5% fathers and 1% mothers had gone to college. Only 5% of the fathers were either professionals or had high-salaried jobs, 36.5% were farmers and 18% were unskilled workers or were unemployed. Forty-six per cent of the children came from families having four or more children.

Regarding home variables which might facilitate achievement, 86% reported the language spoken at home to be the same as the medium of instruction, namely, Hindi. A large proportion, nearly 80% of the students, had attended some type of pre-school programme.⁷ A small percentage (approximately 8%) reported non-availability of textbooks or writing material; about two-thirds had all the necessary study material, and others had some of it. Forty-seven per cent pupils got some help from the family to do their homework, and 25 per cent had a place where they could sit and study. A very small percentage (3%) had to skip school frequently in contrast to 59% who could attend school most of the days. Nearly 50% of the children helped with domestic or other work as required by the family, for two or more hours every day. The children studying in Class IV are quite young for this demand.⁸

The environment at home was not very conducive to learning. A newspaper was received at the homes of 15% of the children only and magazines by 10%. 'No Books other than Textbooks' was true of 73% of the group, but nearly 41% of the children reported reading something other than the textbooks. A small group of 26% watched TV for more than one hour every day and another 30% watched it for some time.

Children in Haryana had the advantage of learning through their home language, and having family support as expressed in the availability of study material, and regularity in attendance. Most of them had also attended some pre-school programme. But one-third of the children were first-generation learners and not many homes had anything (other than the textbooks) to read.

The Teachers

One hundred and sixty-five teachers from 105 schools responded to the questionnaire prepared to elicit information about teachers. Seventy-five per cent were from rural schools, 48.5% were women. Most teachers, (71.5%), had studied up to Class X only; another 16% had studied up to Class XII. Approximately 11% were graduates; only two teachers had not passed the matriculation examination. All teachers had received some professional educa-

7 The State confirmed that a large number of pupils attend Aangan Baris.

8 The State coordinator did not find the statistics exaggerated.

tion,⁹ the largest number (83%) had two years of training for teaching primary classes. Only 6% had the B Ed or the M Ed degree which prepares teachers for teaching at the secondary level.

In Haryana, 82% of the teachers reported having received some in-service training, sixty per cent had received the same for teaching language, the comparable percentage for arithmetic was 47.

Sixty-three per cent teachers spent less than an hour in travelling to and back from work, 14% spent more than two hours every day.

Very few teachers — 4% only — reported adopting any new practices in their teaching. But the percentage that used material other than textbooks was 55%. Seventy-one per cent reported developing some teaching material themselves, they also involved pupils in this exercise.

A negligible percentage of teachers (2%) evaluated students once a year. The rest of them were divided equally over 2-3 and more frequent evaluations. Twenty-two per cent used the results only for promotion but the others used them for removing shortcomings in teaching and learning.

Only 24% teachers had their own copies of the textbooks, another 32% had library copies, and the rest borrowed them from the students (probably on the spot). Sixty-five per cent teachers had no access to a dictionary while 19% had their own copies. Nearly all teachers said they helped the weak students themselves; homework was checked regularly by 91.5%. More than 75% teachers reported that the students asked questions in their classes quite often.

The situations that can be controlled or helped by the State seemed well in favour of improved quality of teaching. Only 2% of teachers were non-matriculantes, probably left-over from the days of non-availability of teachers, particularly women teachers, or teachers for rural areas. In-service education had been extended to 82%. The picture was not as good when it came to availability of textbooks and resource material such as a dictionary. The teachers stuck to old-time practices.

The Headmasters

As compared to the teachers, the percentage of headmasters who had gone through only one year of professional training was higher (25%). The replacement of one year by two years of teacher education in the recent past could be responsible for this. On the average, one expected the headmasters to be older; 36% were older than 50 years, with another 50% in the age-range of 35 to 50 years. Only a small percentage (12.4) of headmas-

ters said that they had teaching experience of less than five years, the majority of them had taught for more than 15 years, but 75% had been headmasters for less than five years only.

The Schools

Seventy-seven per cent of schools were from the rural areas. The corresponding percentage(s) in the Fifth All India Educational Survey was 87% for all schools and 91% for primary schools. As the enrolment per class in the rural schools in Haryana was sufficiently high to allow the maximum sample of 25 children, a higher percentage of urban schools had to be included to maintain the ratio between the rural and urban proportion of the pupils. Of the schools selected, 87% had only primary classes, 9.5% had Classes I to VIII; 4% had Classes I to X or XII. Only 5% schools were private aided, with another 1% completely private, the rest were managed by the State government or local bodies. Eighty-eight per cent were co-educational and 5% exclusively for girls. Middle and the secondary schools are more likely to be the single sex schools. Forty-one per cent schools had a separate room for the headmaster, but only 15% had one for the teachers. Seventy-six per cent schools reported the facility of drinking-water, but only 38% had urinals for girls. Thirty-nine per cent of the headmasters reported that they did not have the basic teaching material such as blackboards, chalk and dusters in sufficient quantity.

Achievements of the Pupils

In all, seven tests were administered to the children of Class IV towards the end of the academic year. The details of the tests are available in Chapter 3.

In all the tests the scores of the children varied over the entire range. In most distributions there was a slight tendency for a double mode, which could be due to significant and substantial differences over; (i) regions (ii) the urban/rural divide.

Table 6.4

ACHIEVEMENTS OF PUPILS

Test	Arith (40) ¹⁰	RC(P) (44)	RC(S) (16)	W K (40)	A W (24)	S S (18)	Spell (25)	Total (207)
Mean	19.4	22.3	8.6	20.2	11.9	10.2	10.9	103.5
SD	9.4	10.8	5.0	10.7	5.6	5.5	7.3	
Mean as Percentage	48.5	50.7	53.7	50.5	49.6	56.7	43.6	50.0
KR - 20	.92	.93	.90	.94	.86	.90	.93	
All India	41.2	45.4	43.1	49.5	41.7	57.8 ¹¹	42.8 ¹¹	45.2
Median as Percentage								

⁹ According to the headmasters, 1.5% of the teachers in schools were untrained; the statistics might have appeared due to errors in marking.

¹⁰ The maximum possible score.

¹¹ Tripura is omitted. The content of these two tests was not common for all the States.

Referring to the table above it can be seen that the average achievement of the pupils on different tests varied between 43.6 to 56.7%. The lowest averages were on the two tests involving tasks specifically learnt in school, namely, arithmetic and spelling. The highest proportionate mean was on the test on Sentence Structure. A part of the learning of this nature may be based on 'listening' -- it may be listening either to adults or to communications on mass-media such as radio and television.

In all the States, a small sample of students of Class V were also administered the same test battery. The pupils were selected from some (not less than 10) of the schools in the sample. The purpose was to compare the increment in achievement after one academic year.

Table 6.5

MEAN ACHIEVEMENTS OF PUPILS--CLASSES IV AND V

Class	Arith	RC(P)	RC(S)	W.K	A.W	S.S	Spell	Total
IV (1728)	19.4	22.3	8.6	20.2	11.9	10.2	10.9	103.5
V (200)	22.2	23.7	9.8	20.1	13.3	11.8	13.0	113.9

With the exception of the test in Word Knowledge, each of the means for Class V was higher than the one in Class IV, even if not by a big margin. Seen with reference to the maximum possible score of 207, the increment in Class V was limited to 5% only.

The average scores of children were also studied in relation to several variables. The State of Haryana was divided into four regions for the purpose of sampling. Proportionate representative samples of schools were selected from these regions as well as from the city of

Ambala which was a surrogate for the capital city.

Ambala, the 'capital city', had the highest achievement. The number of pupils was not large, it is likely that most of these pupils were not first-generation learners. The competitiveness in a big city and opportunities in terms of stimuli available were likely to favour these children.

Achievement-wise, the next best was district Ambala, while the lowest achievement was noticed in Hissar, the difference between the two aggregate scores was 28.5. The average score of children from Ambala City was twice as much as of those from district Hissar.

The achievement of pupils on two of the tests, namely Arithmetic and Reading Comprehension (para) were also studied objective-wise, and in the case of Arithmetic, topic-wise as well.

Table 6.7

ACHIEVEMENT IN ARITHMETIC -- OBJECTIVE-WISE

Objective	Mean	SD	Mean as Percentage
Knowledge (19)	9.1	4.3	47.9
Understanding (12)	6.0	3.1	50.0
Application (9)	4.1	2.7	45.5
Total (40)	19.4	9.4	48.5

The percentage mean on application items was the lowest. The young pupils are learning to apply their knowledge. The mean of 'Knowledge' items was lower than on items testing understanding, this was contrary to expectation.

Table 6.6

ACHIEVEMENTS OF PUPILS -- REGION-WISE

Region		Arith	RC(P)	RC(S)	W.K	A.W	S.S	Spell	Total
Ambala	Mean	32.2	35.7	14.1	31.4	16.3	15.6	17.9	163.2
City (37)	SD	2.1	3.0	2.1	11.1	2.0	2.1	5.7	
Rohatak	Mean	20.5	23.3	8.5	22.1	12.8	10.7	12.7	110.6
(286)	SD	8.3	9.9	4.8	9.9	5.9	5.2	7.6	
Hissar	Mean	16.6	18.9	7.0	16.2	10.3	9.2	8.8	87.0
(455)	SD	8.1	9.6	4.4	8.9	5.2	5.0	6.2	
Ambala Distt.	Mean	22.0	25.2	10.3	21.9	12.8	12.2	11.1	115.5
(511)	SD	10.1	11.6	4.9	11.2	5.8	5.5	7.8	
Gurgaon	Mean	17.0	19.9	7.6	19.8	11.2	8.1	10.8	94.4
(439)	SD	8.9	9.8	5.0	10.7	5.5	5.0	6.8	

Table 6.8

ACHIEVEMENT IN ARITHMETIC — TOPIC WISE

Topic	Mean	SD	Mean as Percentage
Time (3)	1.6	1.0	53.3
Factors and Multiples (7)	3.3	1.9	47.1
Fundamental Operations(12)	5.9	3.3	49.2
Weights and Measures (3)	1.2	0.9	40.0
Fractions (5)	1.9	1.6	38.0
Decimals (7)	3.5	1.7	50.0
Unitary method plus Others (3)	1.8	1.0	60.0
Total (40)	19.4	9.4	48.5

The maximum percentage score of 60 for 'Unitary Method' etc., was in line with the picture obtained in other States as well. The three items, including the two on Unitary Method, proved the easiest everywhere. In Haryana, the lowest score was on Fractions, followed by Weights and Measures. The low score on the latter was somewhat surprising as the topic was within the day-to-day experiences of the children. The high scores on 'Time' and 'Decimals' could be due to recency of introduction of these items.

Table 6.9

ACHIEVEMENT IN READING COMPREHENSION — OBJECTIVE-WISE

Objective	Mean	SD	Mean as Percentage
Noting Detail (17)	9.7	4.6	57.0
Comprehension ¹² (13)	6.4	3.6	49.2
Inference ¹³ (11)	6.0	3.3	42.8
Total (41)	22.3	10.8	50.7

The differences in the mean achievement on the three objectives were in the expected direction. Drawing inference being a higher-level skill is still being learnt by the young pupils. The fifty-seven per cent score on simple understanding of the material could be considered satisfactory.

The differences in the achievements of pupils when divided over location, gender and caste were also studied. The relevant statistics are presented in Tables 6.10 to 6.12.

¹² This includes

(a) deriving meaning of difficult words from the context, and

(b) relating things at a simple level.

¹³ This includes identifying the message or the central idea and the title of the passage.

Table 6.10

DIFFERENCES IN ACHIEVEMENT — LOCATION WISE

Test	Location	Mean	SD	t
Arith	U	24.8	9.1	11.86
	R	17.8	9.0	
RC(P)	U	25.6	11.0	7.90
	R	21.0	10.1	
RC(S)	U	10.7	5.0	10.46
	R	7.8	4.8	
W.K.	U	23.8	11.5	8.49
	R	18.9	10.1	
A.W.	U	13.7	5.5	8.20
	R	11.2	5.6	
S.S.	U	11.9	6.0	7.78*
	R	9.6	5.1	
Spelling	U	12.1	7.5	5.13
	R	10.3	7.1	
RC (total)	U	36.3	11.6	9.32
	R	28.8	11.3	

Urban - 421 Rural - 1307

** $p < .01$

The mean scores of students from the urban areas were persistently and significantly higher than those from the rural areas. The difference was maximum in the test in Reading Comprehension(s) followed by Arithmetic. The aggregates differed by 25.6 scores (approximately 12%). The differences were more persistent and dramatic than noticed in other States. The city of Ambala alone could not have produced this difference as the number of children there was small.

Table 6.11

DIFFERENCES IN ACHIEVEMENT — GENDER-WISE

Test	Gender	Mean	SD	t
Arith	B	19.1	9.1	0.86
	G	19.5	9.7	
RC(P)	B	22.0	10.8	0.21
	G	22.2	10.7	
RC(S)	B	8.3	5.0	1.98
	G	8.8	4.9	
W.K.	B	20.9	10.3	3.47*
	G	19.1	11.1	
A.W.	B	11.9	5.6	1.05
	G	11.7	5.8	
S.S.	B	10.3	5.3	0.64
	G	10.4	7.2	
Spelling	B	11.1	7.2	2.08
	G	10.4	7.3	
RC (total)	B	30.4	14.9	0.82
	G	31.0	14.6	

Boys - 989 Girls - 739

* $p < .05$, ** $p < .01$

The differences on three tests were statistically significant though not large. The definite trend, unlike in the case of location, was missing; one of the differences was in favour of girls and the other two in favour of boys. Two of the three differences (one each in favour of boys and girls) were significant only at .05 level. Unlike in many other States, the girls in Haryana achieved a score comparable to that of boys in Arithmetic. It can be said that there were no definite differences between the achievement of boys and that of girls.

Table 6.12

DIFFERENCES IN ACHIEVEMENT — CASTE-WISE

Test	Gender	Mean	SD	t
Arith	SC	18.1	9.3	3.98
	ST	16.2	6.3	
	BC	20.3	9.1	
	Others	19.5	9.6	
RC (P)	SC	21.1	10.5	1.96
	ST	21.3	9.1	
	BC	22.7	10.7	
	Others	22.1	10.9	
RC(S)	SC	8.3	5.1	.47
	ST	8.1	4.3	
	BC	8.8	4.8	
	Others	8.6	5.0	
W.K.	SC	19.4	10.4	3.38
	ST	17.0	8.2	
	BC	21.6	10.6	
	Others	20.1	10.9	
A.W.	SC	11.8	5.8	4.02
	ST	9.3	4.3	
	BC	12.5	5.1	
	Others	11.7	5.8	
S.S.	SC	9.8	5.8	8.27
	ST	6.7	4.8	
	BC	11.0	5.4	
	Others	10.3	5.3	
Spelling	SC	10.9	7.1	4.29
	ST	7.9	6.0	
	BC	11.9	7.5	
	Others	10.6	7.3	
RC (total)	SC	29.4	14.3	1.54
	ST	29.4	12.6	
	BC	31.5	14.5	
	Others	31.0	15.0	

SC - 418 ST - 40 BC - 245 Others - 1025

* $p < .05$, ** $p < .01$

Although all the F's were not significant, 5 out of 7 (for the seven tests) were. The total scores added to SC-99.7, ST-86.5, BC-108.8 and 'Others' 103.2. The BC group had the highest score on each of the tests, even if the margin of difference was small on some of them. It was followed by 'Others' and SC. These two groups interchanged their positions on two tests but with very small differences. ST lagged behind; it was only 2.3% of the sample.

The most interesting comparison was between Backward Classes and 'Others'. By the name assigned to them it has been generally assumed that they were backward educationally as well, they certainly seemed more ambitious.

Factors Related to Achievement

Pupil-related variables were regressed against the two criteria separately to understand their contribution to differences in achievement. Before that some of the home-background information were combined into three composite variables.

The regression coefficients for the variables entered in the three composite variables are given below.

Home Background

	RC	Arith
Location	-.890	-.708
Father's Occupation	-.128	-.72
Caste	.57	.60
Father's Education	-.13	-.30
Mother's Education	-.47	-.27
Number of Siblings	.61	.62
R	.26	.32

** $p < .01$ * $p < .05$

'Location', 'Caste' and 'Father's Occupation' seemed to contribute substantially in maximising the correlation of 'Home Background' variables with the achievement in school. It may be remembered that there were significant differences between the achievement of urban/rural children and of the caste groups. The other variables were either not important or the same were subsumed by the earlier three. All the six zero-order correlations of the three independent variables with insignificant regression coefficients and two dependent variables were less than or equal to 0.03.

Facilities for Learning

	RC	Arith
Attended Pre-School	-.084	-.215
Place for Study	.451	.312
Help in Home-work	1.60	1.29
Availability of Textbooks	.054	.132
Availability of Study Material	.083	.076
Helping Household	.096	.133
Regularity in Attendance	-.333	-.239
R	.022	.030

** $p < .01$

The variables listed above reflect the family's concern about the child's education. Of these, three seemed to make a difference to achievement in school in general. These were 'Place at Home, for Study', 'Help in

Homework' and 'Attending School Regularly'. In addition 'Availability of Textbooks and Attending Pre-school' made some difference to achievement in arithmetic. In contrast, 'Availability of Notebooks' did not contribute anything in maximising the relationship, it could have been subsumed in 'Availability of Textbooks'.

Educational Environment at Home

	RC	Arith
Get Newspaper	-0.01	-0.25
Get Magazines	-0.73	-0.43
Books at Home	2.77	1.52
Reads Books	3.46	1.29
R	0.19	0.14

** $p < 0.1$

The variables that contributed to difference in achievements were the family having books and the child reading something other than his/her textbooks. The reading habits of the family including that of the child made a difference to the learning of the pupil in school.

Getting a newspaper or magazines was probably a very casual thing.

The three composite variables and five others were regressed with achievement in Reading Comprehension and Arithmetic, with a view to understand their contribution to differences in pupil achievement.

Table 6.13(a)

CONTRIBUTION OF PUPIL-RELATED VARIABLES TO ACHIEVEMENT IN READING COMPREHENSION

Variable	R	R ²	Increment in R ²	F	r
Word Knowledge	0.5830	0.3399	0.3399	889.4	0.58
Facilities for Learning	0.6033	0.3640	0.0241	65.7	0.22
Home Background	0.6137	0.3766	0.0126	34.8	0.26
Eduatl. Environ	0.6205	0.3851	0.0085	23.8	0.20
Gender	0.6233	0.3885	0.0034	9.6	0.02
Age	0.6252	0.3908	0.0023	6.5	0.05
Time Watch TV	0.6255	0.3912	0.0004	1.1	0.07
Similar Language	0.6258	0.3916	0.0004	1.1	0.01

* $p < .05$, ** $P < .01$

As in case of many other States, the variable meant to represent differences in pupil ability contributed most to the variance related to either of the criterion variables. The proportion was a little lower for Arithmetic. The two variables which made an insignificant addition to R^2 for both criteria were 'Time Watch TV' and 'Similarity of Language'. More than half the children said they watched some television every day, but it did not have any inde-

pendent bearing on their achievement in school-related tasks. Fourteen per cent children in Haryana had said they spoke a language other than Hindi at home. Concluding from the small percentage, this probably was not the group speaking Hindi at home. The State, being adjacent to and having been a part of the erstwhile State of Punjab, could have a substantial group which spoke Punjabi at home. But Punjabi, being very similar in grammar and vocabulary to Hindi, was not likely to be any disadvantage to the children.

Table 6.13 (b)

CONTRIBUTION OF PUPIL - RELATED VARIABLES TO ACHIEVEMENT IN ARITHMETIC

Variable	R	R ²	Increment in R ²	F	r
Word Knowledge	0.5337	0.2848	0.2848	688.1	0.53
Facilities for Learning	0.5774	0.3334	0.0486	125.8	0.28
Home Background	0.5991	0.3590	0.0256	68.9	0.31
Gender	0.6013	0.3616	0.0026	7.0	0.02
Time Watch TV	0.6017	0.3621	0.0005	1.3	0.06
Age	0.6022	0.3626	0.0005	1.3	0.03
Similar Language	0.6024	0.3629	0.0003	0.8	0.01
Eduatl. Environment	0.6025	0.3630	0.0001	0.3	0.14

** $p < .01$

'Educational Environment at Home' turned out to be significant in relation to Reading Comprehension but not with respect to Arithmetic, the 'r's were 0.20 and 0.14, respectively.

Compared with other States, the variance explained by pupil-related variables in Haryana was on the high side.

In Tables 6.13 (a) and 6.13(b), the effect of home background of the pupils as well as individual related variables, including an index of ability on the differences in the scores achieved by them on the two criterion variables, was studied. In Haryana, the two R^2 's were on the higher side, being 39% and 36% with respect to Reading Comprehension and Arithmetic, respectively, both were much higher than the country medians of 27 and 18%. The difference was larger for Arithmetic.

Differences in pupil-achievement could arise because of the impact and interplay of several variables. Schools would, probably, play a more significant role than the homes would. Lesser variation was expected in schools than in homes, the former being administered by one or two agencies in several States, while each home, like an individual, could be different from the other. But, in spite of apparent standardisations, differences were no-

14 Spelling was the test on which the achievement of Punjabi-speaking children could get affected

ticed even in availability of facilities not to speak of utilisation of the same

The school means differed nearly as widely as the scores of the pupils. The standard deviation of 104 means on the test in arithmetic was 8.0 as compared to 9.4 of the distribution of scores of more than 1,700 pupils.¹⁵

All the school-related variables excluding those providing information about the teachers and practices adopted by them in teaching were regressed with pupil achievement

Table 6.14 (a)

CONTRIBUTION OF SCHOOL-RELATED VARIABLES TO
ACHIEVEMENT IN READING COMPREHENSION

Variable	R	R ²	Increment in R ²	t	r ¹⁶
Teachers per Class Group	0.2512	0.0631	0.0631	6.87	-0.25
Classes in School	0.3458	0.1196	0.0565	6.48	0.19
Teachers Untrained	0.3991	0.1593	0.0397	4.72	-0.19
Percentage Attendance	0.4439	0.1971	0.0378	4.66	0.21
Age of the Pupil	0.4743	0.2250	0.0279	3.52	-0.14
Teaching Experience of Headmaster	0.4915	0.2416	0.0166	2.13	-0.13
Facilities for Teachers	0.5077	0.2578	0.0162	2.09	0.08
Time Given (Auth)	0.5259	0.2766	0.0188	2.47	0.17
Time Given (Lang)	0.5406	0.2923	0.0156	2.08	0.08
Books in the Library	0.5582	0.3116	0.0193	2.61	0.02

* $p < 0.5$

Table 6.14(b)

CONTRIBUTION OF SCHOOL-RELATED VARIABLES TO
ACHIEVEMENT IN ARITHMETIC

Variable	R	R ²	Increment in R ²	t	r
Percentage Attendance	0.2267	0.0514	0.0514	5.53	0.23
Administration of School	0.3066	0.0940	0.0426	4.75	0.22
Teachers Untrained	0.3941	0.1553	0.0613	7.26	-0.18
Age of the Pupil	0.4549	0.2069	0.0516	6.44	-0.16
Financial Freedom	0.4862	0.2364	0.0295	3.78	-0.05
Location	0.5030	0.2531	0.0167	2.17	0.21
Book Bank	0.5232	0.2737	0.0206	2.72	0.13
Operation Black-board	0.5406	0.2923	0.0186	2.50	0.00
Rooms per Class Group	0.5568	0.3100	0.0187	2.55	-0.10

* $p < 0.05$; ** $p < 0.01$

All the thirty-one variables in which information was available from the School Questionnaire were entered in the regression analysis, but only those and a few more down the line, which contributed to a statistically significant increment to R^2 , are listed in the tables given above. The cumulative R^2 was 39% for Reading Comprehension and 44% for Arithmetic; both the values were higher, as in the case of between pupil differences, than the country median of 26% and 30%, respectively. The general picture was similar to the one in Tables 6.13 (a) and 6.13(b).

It was expected that more variability in achievement in Arithmetic would get attributed to school-related variables than to home-related variables, while for Reading Comprehension, the picture would be reversed. It was so in Haryana as far as Arithmetic was concerned, the difference was not very much. For Reading Comprehension, the two were equal.

The two that made a significant contribution to R^2 consistently for both the criterion variables were 'Percentage Teachers Untrained' and 'Percentage Attendance' of the pupils. The former came as a surprise because, there were hardly any untrained teachers in Haryana; the headmasters reported 1.5% as being in this category. Both the 't's had expected signs, these were not high but the consistency in value and direction left one perplexed. The second variable made sense.

In addition, 'Availability of Teachers per Class Group' and 'Classes in Schools' also made a significant contribution to R^2 with respect to Reading Comprehension. The average availability of teachers in Haryana was not poor—4 teachers for 5 Class-groups but the differences on this variable, between schools located in urban or rural areas and primary (only), middle and secondary schools could exist. Urban children were found to achieve higher (Table 6.10), if children studying in Class IV of primary schools also had higher mean achievement than those studying in the primary sections of middle and secondary schools¹⁶ (13% in the sample), the finding would fit in very well.

'Administration of the School' and 'Average age of the Pupil' made a significant addition to R^2 statistically with respect to Arithmetic. The latter also appeared in Table 6.14 (a); both the 't's were negative, indicating low achievement on the part of the older pupils. The average age of the pupil from backward communities could be higher at the entry point, they might also be repeating classes in larger numbers, producing a negative correlation between age and achievement.

Although 92% schools were managed by the govern-

¹⁵ Both of these were higher than the country medians of 6.4 and 7.9, respectively.

¹⁶ In some States the mean achievements of children coming from three types of schools were compared, children of primary schools did better than the others in some parts of the country. Separate means for primary, middle and secondary schools were not worked out for Haryana.

ment, 2% by local bodies and only 6% were private aided or private schools, differences in achievement in Arithmetic appeared in the analysis. These were not noticed in language. Private schools had a higher achievement than the government-managed institutions.

School-related variables had a considerable impact on the achievements of pupils. Even if the number of variables which made a significant contribution was not large, the total R^2 s were not considered low.

Table 6-A

INTER CORRELATIONS OF PUPIL-RELATED VARIABLES AND ACHIEVEMENT

[illegible]

Table 6-B

INTER CORRELATIONS OF SCHOOL-RELATED VARIABLES AND ACHIEVEMENT

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
1.00	-46	-25	05	02	38	-03	-19	40	-20	16	02	-13	-10	18	21	01	-27	09	28	15	-06	32	13	-04	08	-11	-05	01	-12	13	02	00	04	-06	06	07	08	02
1.00	07	15	07	-22	-04	14	-09	26	-06	20	19	14	-08	02	-06	06	01	-15	-10	-23	-26	02	-20	-05	11	-03	00	-11	-03	01	-11	-08	-09	-04	-12	-06	-10	
1.00	14	15	-14	-02	23	-07	24	03	23	17	22	-03	-06	02	-05	09	-19	-00	-14	-24	01	-05	10	14	03	04	-04	01	-04	-12	-14	-10	-02	-09	-03	-13		
1.00	04	11	-00	01	15	23	02	25	08	-06	20	08	-06	20	08	-03	03	01	-09	-04	10	-03	-05	-10	-02	-10	-16	-19	-12	-10	01	-00	05	-12	-05	-00	-11	01
1.00	25	-19	07	20	12	-09	19	33	-09	-09	18	02	-22	12	23	24	-17	05	19	23	00	14	21	-08	21	10	21	10	17	12	09	06	04	13				
1.00	02	-20	60	-04	12	05	-07	-12	23	19	01	-22	17	37	34	08	47	-03	28	05	-10	06	-14	06	-31	22	14	20	14	15	14	07	17					
1.00	-05	13	22	-00	-03	-04	07	06	01	10	-01	-15	-10	10	09	19	01	07	00	-07	-01	13	06	07	-02	-05	02	09	-02	-04	08	-03						
1.00	-19	19	-03	02	18	08	06	-17	07	06	15	02	-03	-13	-22	06	-06	-05	05	08	11	01	-05	-01	-01	-05	-13	-09	-08	-21	-02							
1.00	04	22	06	02	-19	21	19	-02	-16	-05	23	15	-05	46	15	09	09	-02	02	-15	-06	06	21	18	11	16	21	20	19									
1.00	-01	00	10	06	-01	-04	08	05	07	-05	08	03	-20	-01	-02	-01	01	04	14	15	06	10	-01	06	01	-04	03	-09	02									
1.00	-02	06	05	03	17	-01	01	-01	12	-08	09	15	04	-04	10	-03	-07	-18	-15	01	02	03	10	01	08	13	-03	05										
1.00	13	-15	55	32	00	-04	13	06	05	02	02	07	11	20	-10	-13	03	-02	01	-09	-16	-12	-14	-09	-13	-15	-15											
1.00	09	-04	-01	00	03	03	01	-02	-15	-08	29	06	04	02	-09	01	-11	-02	-09	-04	-02	-09	-10	-07	00	-04												
1.00	-20	03	04	01	-11	-24	-00	-01	-19	-02	-06	19	12	13	-07	16	-01	-16	-15	-10	-05	-11	-25	-10	-14													
1.00	15	-01	06	09	11	00	10	28	-02	08	06	-11	-14	18	01	09	-18	-18	-17	-25	-20	-19	-20	-19														
1.00	11	-16	-02	07	01	-21	22	-05	18	-02	-06	-04	-11	06	01	-21	-27	-17	-24	-36	-17	-18	-25															
1.00	-10	-11	-01	00	-02	03	12	01	06	-08	-04	15	-06	02	-10	-08	03	-13	-05	02	01	-05																
1.00	-10	-18	-08	13	-07	-12	-13	-19	18	16	-14	07	-10	-10	-01	-11	-07	-16	-04	-05	-04																	
1.00	62	02	-06	13	07	-12	-09	-14	11	26	-24	06	02	06	10	07	19	00	07	08																		
1.00	04	-03	33	16	-01	-02	-11	-07	21	-09	17	15	12	12	09	30	09	06	12																			
1.00	-01	23	06	37	07	-22	08	-01	-00	52	04	00	06	04	02	05	10	02																				
1.00	00	-10	-03	05	09	13	-12	20	-01	13	11	08	09	10	11	05	12																					
1.00	01	21	04	-02	-02	06	-01	21	-03	06	08	03	01	02	10	07																						
1.00	-02	08	-06	-03	01	-26	12	03	03	11	02	05	-01	-00	05																							
1.00	19	03	16	-10	16	22	-05	-05	-04	-04	-05	-06	01	-05																								
1.00	17	10	-15	07	06	23	21	19	28	25	19	21	21																									
1.00	84	-23	41	-32	02	08	05	08	01	01	08	08																										
1.00	-22	44	-09	11	17	16	17	07	09	13	17																											
1.00	-27	04	00	02	02	02	08	-04	-04	01																												
1.00	-08	01	01	14	14	-04	-03	00	01																													
1.00	-02	-01	04	-02	-03	-05	-07	01																														
1.00	76	73	65	68	70	52	78																															
1.00	83	75	69	78	67	99																																
1.00	70	68	72	57	91																																	
1.00	67	65	68	77																																		
1.00	72	64	72																																			
1.00	63	79																																				
1.00	67																																					
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Jammu

When requested to participate in this study, the State of Jammu and Kashmir appointed two coordinators at the State level to look after the work in Jammu and in Kashmir the Valley separately. The Coordinator from Kashmir started the work related to the initial stages but had to withdraw because of disturbed conditions in the Valley. Jammu continued its contact but did not try out the tests, nor did it administer the tests in the sample of schools originally selected as per the procedure followed in other States. The final testing was done a full year later, in March 1992 instead of February - March 1991. A fresh sample of schools was drawn for the district of Jammu only and the tests administered to nearly 800 pupils of Class IV. The choice of district was as per the convenience of a hurried job but care was taken to eliminate any bias in the selection of schools. Although in the beginning stages the State had said that the majority of the children learnt through the medium of Urdu, the final testing was carried out on children whose medium of instruction at school was Hindi, again because the work could not be delayed any further.

Some of the statistics as available from the obtained samples were compared with those reported in the Fifth All India Educational Survey conducted by the NCERT in 1986. The comparison was somewhat handicapped because the figures available from the 1986 Survey were for the entire State of Jammu & Kashmir while the data of this study was not only confined to the Jammu region but to Jammu district only.

Table 7.1

SAMPLE AS COMPARED TO THE POPULATION

Variable	Percentage	
	1986 Survey	Sample in the Study
Primary (only) Schools	71.6	43.6 ¹
Girl Students	39.8	43.4 ²
Scheduled Caste Students	8.7	33.2 ²
Scheduled Tribes Students	0.0	6.7 ²
Women Teachers	38.1	45.6 ³
Trained Teachers	78.3	77.9

Source

1 The School Questionnaire

2 The Pupil Questionnaire

3 The Teacher Questionnaire

The percentage of primary (only) schools decreased very substantially, which could be due to restriction of the sample to Jammu district. More schools could be middle schools in this area or the same might have been upgraded in these five years. The increase in percentage of girls and Scheduled Tribes pupils was in the expected direction. No ST children were in the schools according to the 1986 survey, but in this sample, their percentage was 6.7%. A sharp increase was also noticed for SC pupils. Some demographic changes could also have taken place during this interval because of continued disturbed conditions in part of this as well as a neighbouring State.

The increase in number of women teachers was in the expected direction, particularly in the light of the importance given to this in the Educational Policy of 1986. There was a negligible difference in the percentage of trained teachers.

The most important deviation was noticed in the percentage of primary (only) schools. Even then, because the sample of schools was drawn from one district only, it could not be said clearly whether it was biased.

The Tests in the State

As mentioned earlier, the State used the tests as prepared in Hindi; no changes were made.

Table 7.2

DIFFICULTY VALUES OF THE ITEMS

Pass Percentage	Arith.	RC(P)	RC(S)	W.K.	A.W.	S.S.	Spell.
10 - 19		1	1	—	2		4
20 - 29	4	4	4		5		5
30 - 39	12	9	7	16	4	4	11
40 - 49	9	22	—	20	9	11	3
50 - 59	9	8	3	3	4	3	2
60 - 69	5		—	1	—	—	
70 - 79	1		1				
Median	43.9	43.1	33.8	41.5	40.6	44.9	32.7

The tests were moderately difficult for the State, the most difficult being the one on spelling. Some school

systems defer teaching this skill till long. This was followed by Reading Comprehension (sentences). In several States, items on this test were found to be difficult but this picture was most frequently followed by a similar picture on the test on "Appropriate Word" which had the same type of items as the Reading Comprehension (sentences). In Jammu, the items on the latter test had pass percentages more comparable to the rest of the battery. The reasons for the items on Reading Comprehension (sentences) proving difficult were not clear.

Only 20% of all the pass percentages were equal to or above fifty per cent—most of these remained in the 50% — 59% range.

The Groups in the Study

The Pupils

Eight hundred and eighty pupils, who had studied up to Class IV responded to the tests, 86% were from rural areas and 43% were girls. The percentage of Scheduled Castes children was a high of 33%, with 7% belonging to Scheduled Tribes. The average age of the pupils was 10.7 years.

Forty-six per cent fathers and 62% mothers were illiterate, another 19% fathers and 18% mothers had studied only up to the primary level. On the other side, approximately 2% of fathers and mothers had gone to college. Fifty-nine per cent fathers were farmers, and another 15% were either unskilled workers or were unemployed. Eleven per cent were either professionals or had high-salaried jobs.⁴ Forty-five per cent children came from families having four or more children.

Nearly 79% children said they spoke some language other than Hindi at home. (Dogri is spoken by a very large group in Jammu.) Only 19% children had attended some kind of pre-school programme.

Less than 50% children reported having most of the textbooks or other study material. So far as the textbooks were concerned, the statistics was higher only to Bihar and comparable to Andhra Pradesh. But 45% children said they received help in doing their homework, and 37% had some place at home where they could sit and study. A large proportion as compared to the other States—(45.5%)—were required to help their families with domestic or occupation-related work for four or more hours every day. The percentage of children that could attend school most of the days was a moderate 55%.

A newspaper at home was reported by a small 24%, and magazines by 19%. Seventy-two per cent families had no books at home and a nearly comparable percent-

age of children said they read nothing besides their textbooks. Forty-four per cent children watched TV daily, with 9.5% watching it for more than two hours a day. The latter statistic was smaller only to the figures for Delhi and Haryana.

In general, the children from Jammu were somewhat at a disadvantage, a fairly large number was from socially deprived groups, more parents were illiterate. Several of the children did not get essential study material and they had to help their families for long hours, they also had to miss school on several days.

The Teachers

One hundred and fourteen teachers responded to the questionnaire meant to elicit information about their educational background, the facilities they had for performing the job and the practices they followed. Eighty-nine per cent of these teachers were teaching in the rural areas, 46% were women. Nearly one-third of them were young, being less than 35 years of age; only 15% were older than 50 years. In general, they were an experienced lot, only 24% had taught for less than 5 years, 35% of them had taught for more than 20 years.

Forty per cent of the teachers in Jammu were graduates, a comparable number had studied only up to Class X, nearly 3% were non-matriculates. A large majority of 68% had received one year of professional education meant to prepare teachers for primary schools, 18% had a B.Ed. degree. More than four per cent teachers did not respond to this question; they, along with another 5% who ticked the alternative 'any other', could be untrained. The headmasters reported 2.2% teachers in schools to be untrained. The discrepancy between this statistic and the maximum 9% teacher respondents being untrained could arise because of biased sub-sampling of the teacher respondents. Fifty-two per cent teachers had received some in-service education.

Although 89% teachers were teaching in the rural areas, only 30% were residing very close to their schools, another 26% needed half to one hour to travel to and from school. Nearly 20% spent more than two hours every day in travelling -- a percentage smaller only to the ones in Meghalaya and Tripura, which have a difficult terrain.

Most teachers (90%) did not experiment with any new practices in teaching but they did feel that innovative approaches would enhance pupils' interest and achievement. Twelve per cent teachers said they did not use any material other than textbooks for teaching but 42% reported using other material frequently. Seventy-

⁴ The data for one more student was dropped after this stage.

⁵ Only 18.5% fathers had studied up to matriculation and above. Therefore, these could be school teachers and persons working on moderate salaries in offices.

eight per cent had developed at least some of it themselves, and 68% had even involved their pupils in this task.

Nearly 70% teachers in Jammu followed the traditional practice of evaluating pupils 2 - 3 times a year, 17.5% tested them every month, and 13% once a year. Approximately half the teachers used the feedback thus available only for promotion, 20% said they used it for improving their teaching and the learning on part of the pupils. Only 2% teachers asked parents of weak pupils to arrange tuition, the majority said they helped the students themselves. More than 88% teachers reported pupils asking questions in the class quite often.

Thirty per cent teachers borrowed textbooks from the pupils -- probably on the spot, the rest had either their own copies or the ones from the library. Thirty per cent had no access to a Hindi language dictionary.

In brief, the teachers in Jammu were well qualified and experienced; the number of graduates was a high 40%. Quite a few travelled long distances to reach their schools. They kept to the old and familiar practices of teaching and evaluation. Not all of them had the basic minimum material for teaching.

The Headmasters

Thirteen per cent of the 110 headmasters who filled in the School Questionnaire were untrained, but 42% had a B Ed degree which implied that they were graduates. Most of them were mature in age, only 12% were younger than 35 years. Correspondingly, 75% of them had taught for more than 15 years but 8% had been in teaching for less than five years. More than one-third of them had been headmasters for less than five years.

The Schools

All the schools in this sample were from the district of Jammu, 84.5% were from rural area. Eighty-one per cent were managed by the government and another 15% by local bodies; 3.6% were either private or private aided. Only 44% of the schools were primary (only), of the rest, 40% were middle and 16% were secondary schools. Forty per cent had pre-primary classes as well. Sixty-one per cent schools were co-educational. The percentage of schools that admitted girls only was twice as high as that which admitted only boys. Fifteen per cent of the schools had been opened in the last 10 or less than 10 years.

Fifty-eight per cent schools had a separate room for the headmaster and 33% had a common room for the

teachers as well. Drinking-water was available in 58% of the schools but only 33% of them had separate urinals for girls. Twenty-eight per cent schools reported having the facility of a Book Bank. Headmasters reported an average of 473 books in the library.⁶

The combined percentage of headmasters who reported absence of 'No Detention' and those who omitted to answer this question was 6.3%. More than 50% followed it for Class I only, 22% up to Class II and 8% up to Class IV. The percentage of private/private aided schools was not very high.

Operation Blackboard had not reached 65% of the schools till then (1992). Eighty-five per cent schools did not have a Parent Teacher Association.

Achievements of Pupils

Eight hundred and seven pupils who had studied up to Class IV took the test battery in Jammu.

Table 7.3

ACHIEVEMENTS OF PUPILS

Test	Arith (40) ⁷	RC(P) (44)	RC(S) (16)	WK (40)	AW (24)	SS (18)	Spell (25)	Total (207)
Mean	17.9	18.6	7.9	17.1	9.9	8.1	8.0	87.5
SD	7.9	10.0	4.1	10.8	5.2	5.3	6.0	
Mean as Percentage	44.7	42.3	49.4	42.7	41.2	45.0	32.0	42.3
KR-20	0.87	0.92	0.86	0.94	0.83	0.89	0.89	
All India	41.2	45.4	43.1	39.5	41.7	57.8 ⁸	42.8 ⁸	45.2
Median as Percentage								

With the exception of the test on Spelling, all other averages were above 40%, the highest being on the test of Reading Comprehension (sentences). The poorest performance was on the test on Spelling. In many systems, emphasis on spelling comes much later. Compared to the overall average, the achievement in arithmetic seemed satisfactory.

All States were requested to test a small sample of children of Class V. A sample of 200 pupils to be selected from at least 10 schools identified as representative of the group of schools in the study was recommended. These schools were to be selected on the basis of judgement. In Jammu, the test battery was administered to 304 pupils of Class V, their average on the aggregate was lower than the children of Class IV. This picture was seen in several States in the country but was quite difficult to comprehend or explain.

⁶ All these statistics should be seen in the light of the large number of middle and high schools which generally have better facilities.

⁷ The maximum possible score.

⁸ Tupura is excluded. The content of these two tests was not common for all the States.

Table 7.4

ACHIEVEMENTS OF PUPILS - CLASSES IV AND V

Test	Arith (10) ⁷	RC(P) (44)	RC(S) (16)	W.K. (40)	A.W. (24)	S.S. (18)	Spell. (25)	Total (207)
IV (807)	17.9	18.6	7.9	17.1	9.9	8.1	8.0	87.5
V (304)	17.5	18.0	8.2	16.5	9.9	7.6	6.9	84.6

Even on the two tests comprising tasks learnt mainly in school, namely, arithmetic and spelling the means of the Class V pupils were lower than those of the pupils of Class IV. In arithmetic, the children could be concentrating on new areas introduced, showing poor performance on topics learnt earlier but not assimilated too well. But the test in spelling could not be considered strictly specific to what was introduced in Class IV. The words keep recurring in the books. A more thorough investigation might throw some light on this situation.

Achievements on two of the tests, namely, Arithmetic and Reading Comprehension (paragraphs), were also studied objective-wise, and in case of Arithmetic, topic-wise also.

Table 7.5

ACHIEVEMENT IN ARITHMETIC — OBJECTIVE-WISE

Objective	Mean	SD	Mean as Percentage
Knowledge (19)	8.6	3.8	45.3
Understanding (12)	5.6	2.8	46.7
Application (9)	3.7	2.3	41.1
Total (40)	17.9	7.9	44.7

No differences in percentage mean scores on items categorised under Knowledge and Understanding were noticed in other States as well. This could be due to a very thin line, in general, between these two objectives at this elementary level, or due to the items under Knowledge being easier. In Jammu, the mean on items involving application was not much lower; keeping the young age of the students in mind, it could be considered satisfactory.

Table 7.6

ACHIEVEMENT IN ARITHMETIC — TOPIC-WISE

Topic	Mean	SD	Mean as Percentage
Time (3)	1.6	1.1	53.3
Factors and Multiples (7)	2.8	1.7	40.0
Fundamental Operations (12)	5.5	2.9	45.8
Weights and Measures (3)	1.3	.9	43.3
Fractions (5)	1.8	1.3	36.0
Decimals (7)	3.3	1.7	47.1
Unitary Method plus Other	1.7	1.0	56.7
Total (40)	17.9	7.9	44.7

9 This includes

- (a) deriving the meaning of difficult words from the context, and
- (b) relating things at a simple level

10 This includes identifying the message or the central idea and the title of the write-up

The highest percentage scores on Unitary Method and Time were seen in several States. It could partly be due to items in these areas being easy or because both the topics were taught in Class IV. The achievement was lowest in Fractions but not for Decimals. A score of 45.8% was considered very low on Fundamental Operations which the children had been learning for the last three years and which would be basic for further learning of arithmetic. The children seemed to have been exposed to all the topics, in any case.

Table 7.7

ACHIEVEMENT IN READING COMPREHENSION -- OBJECTIVE-WISE

Objective	Mean	SD	Mean as Percentage
Noting Details (17)	8.2	4.4	48.2
Simple Comprehension ⁹ (13)	5.6	3.3	43.1
Inference ¹⁰ (14)	4.8	3.1	34.3
Total (44)	18.6	10.0	42.3

The differences in the mean achievements were in the expected direction. 'Drawing Inference' is a higher-level competency which was probably still being learnt. A 48% score on getting information from the simple material in the mother tongue was not considered satisfactory.

The differences in the achievements of pupils, when divided over location, gender and caste, were also studied. The relevant details are presented in the tables that follow.

Table 7.8

DIFFERENCES IN ACHIEVEMENT — LOCATION-WISE

Test	Location	Mean	SD	t
Arithmetic	U	21.9	8.8	5.86'
	R	17.3	7.6	
RC (P)	U	24.5	12.5	5.81
	R	17.8	9.3	
RC (S)	U	9.9	5.0	5.31
	R	7.6	4.2	
W.K.	U	20.7	13.4	3.92
	R	16.4	10.2	
A.W.	U	2.6	6.1	5.97'
	R	9.5	4.5	
S.S.	U	10.7	6.3	5.86''
	R	7.6	5.0	
Spelling	U	10.1	7.1	4.00'
	R	7.7	5.7	
RC (total)	U	33.4	16.2	6.09'
	R	25.3	12.6	
T(5 + 6 + 7)	U	3.4	16.7	6.34'
	R	24.8	12.7	

Urban - 114 Rural - 693

'' p < .01

The urban children achieved consistently and substantially higher than the rural group on all the tests, leaving no doubt about the very clear conclusion. Their aggregate score of 109.4 was 12% more than the 83.9 of rural children. Poverty, lack of facilities for learning, more parents being illiterate, could be some of the variables influencing this difference.

Table 7.9

DIFFERENCES IN ACHIEVEMENT — GENDER-WISE

Test	Gender	Mean	SD	t
Arithmetic	B	18.0	8.1	0.50
	G	17.8	7.7	
RC(P)	B	18.8	10.1	0.77
	G	18.3	9.9	
RC(S)	B	7.8	4.6	0.81
	G	8.1	4.2	
W.K.	B	17.0	11.1	0.00
	G	17.0	10.4	
A.W.	B	9.8	5.3	0.90
	G	10.1	5.0	
S.S.	B	7.9	5.4	1.00
	G	8.3	5.2	
Spelling	B	8.1	6.3	0.18
	G	8.0	5.6	
RC (total)	B	26.6	13.6	0.31
	G	26.3	13.2	
T (5 + 6 + 7)	B	25.7	14.1	0.65
	G	26.4	13.2	

Boys - 456, Girls - 351

In contrast to the location-wise divide, there were no differences in the achievements of boys and girls. Small differences over various tests were evenly distributed over the two groups. The proportion of girls in schools was somewhat smaller, being 43.4% of the sample, but it could not be said with confidence that it left the girls as a select group.

A difference was noticed in the achievement of Scheduled Castes children and the rest of the group. The aggregate scores of the four groups added to: SC - 81.4, ST - 91.6, BC - 92.2¹¹ and 'Others' - 90.0; the last three groups looked more similar. In any case, the number of pupils under BC or ST was quite small.

Factors Related to Pupil Achievement

Data regarding the home background of the pupil was regressed with achievement in Arithmetic and Reading Comprehension to identify such variables as contribute to difference in achievement. In the first step, some of

the related background variables were combined together in three separate composite variables.

The regression coefficients for the variables entered in the three composite variables are given below.

Table 7.10

DIFFERENCES IN ACHIEVEMENT — CASTE-WISE

Test	Group	Mean	SD	t
Arithmetic	SC	17.0	7.9	1.69
	ST	18.7	7.8	
	BC	18.3	8.4	
	Others	18.3	7.9	
RC(P)	SC	17.7	9.3	1.28
	ST	19.8	9.9	
	BC	19.8	10.7	
	Others	18.7	10.3	
RC(S)	SC	7.5	4.21	1.60
	ST	8.6	4.3	
	BC	8.2	4.6	
	Others	8.1	4.5	
W.K.	SC	15.4	10.4	3.28
	ST	17.8	11.7	
	BC	18.3	10.8	
	Others	17.8	10.9	
A.W.	SC	9.0	4.8	4.78**
	ST	11.2	5.1	
	BC	10.5	5.2	
	Others	10.3	5.4	
S.S.	SC	7.7	5.0	0.61
	ST	8.1	5.4	
	BC	8.6	5.9	
	Others	8.2	5.4	
Spelling	SC	7.1	5.8	3.92
	ST	7.4	5.8	
	BC	8.5	5.7	
	Others	8.6	6.1	
RC (total)	SC	25.2	12.4	1.54
	ST	28.4	13.2	
	BC	28.0	14.3	
	Others	26.8	13.9	
T (5 + 6 + 7)	SC	23.9	12.6	3.38*
	ST	26.6	14.3	
	BC	27.6	14.1	
	Others	27.0	14.1	

SC - 268, ST - 54, BC - 66, Others - 419

* $p < 0.05$, ** $p < 0.01$

Home Background

	RC	Arith
Location	-7.55*	-4.42*
Father's Occupation	0.05	-0.11
Caste	0.35	0.31
Father's Education	0.56	0.54
Mother's Education	0.01	-0.23
Number of Siblings	-1.01	-0.13
R	0.23	0.23

** $p < 0.01$

¹¹ A higher mean score of BC students was noticed in other States as well.

Among the set of variables grouped together under 'Home Background', 'Location' stands out as the sole/ and most significant variable which seemed to be related to school achievement. It is likely that several other variables such as 'Father's Occupation' or 'Parent's Education' were subsumed by it. Large significant differences between urban and rural groups were noticed earlier as well.

Facilities for Learning

	RC	Arith
Attended Pre-school	1.59	1.65
Place for Study	0.76	0.06
Help in Homework	-0.58	0.29
Availability of Text Books	2.32	1.14
Availability of Study Material	-0.86	0.08
Helping Household	1.58	0.31
Regularity in Attendance	1.49	0.50
R	0.18	0.16

* $p < 0.05$, ** $p < 0.01$

The availability of textbooks contributed significantly towards differences in achievement. Less than 50% of the children said they had most of the textbooks. Attending pre-school, the demands of the family on the child's time and regularity in attending school were some other variables which seemed correlated with achievement in school. Regression coefficients were either significant with respect to one of the criterion variables or were reasonably high with similar signs in both the equations.

Educational Environment at Home

	RC	Arith
Get Newspaper	0.97	0.37
Get Magazines	1.76	0.65
Books at Home	0.09	0.29
Reads Books	2.07	0.92
R	0.13	0.10

* $p < 0.05$

The only variable that had a significant regression coefficient, and that, too, with only one of the criterion variables, was the child reading books other than textbooks. Availability of newspapers and magazines made small contributions towards the composite variable, which had only very limited correlation with the criterion variables.

The three composite variables as obtained against Reading Comprehension and five others were regressed with achievement in Reading Comprehension and Arithmetic, separately. Increments in R^2 are given in the following tables.

Table 7.11(a)

CONTRIBUTION OF PUPIL RELATED VARIABLES TO ACHIEVEMENT IN READING COMPREHENSION

Variable	R	R ²	Increment in R ²	F	p
Word Knowledge	0.4709	0.2218	0.2218	219.39	0.47
Home Background	0.1931	0.2152	0.0214	22.71	0.23
Similar Language	0.5011	0.2511	0.0082	8.78	0.11
Facilities for Learning	0.5071	0.2575	0.0061	6.62	0.19
Time Watch TV	0.5126	0.2627	0.0052	5.70	0.20
Age	0.5155	0.2658	0.0030	3.31	0.06
Educational Environment	0.5156	0.2658	0.0001	0.07	0.14
Gender	0.5156	0.2658	0.0000	—	0.02

* $p < 0.05$, ** $p < 0.01$

Table 7.11 (b)

CONTRIBUTION OF PUPIL RELATED VARIABLES TO ACHIEVEMENT IN ARITHMETIC

Variable	R	R ²	Increment in R ²	F	p
Word Knowledge	0.3561	0.1270	0.1270	117.15	0.46
Home Background	0.3915	0.1532	0.0262	21.87	0.23
Age	0.1061	0.1651	0.0119	11.15	0.09
Time Watch TV	0.4155	0.1726	0.0075	7.27	0.19
Similar Language	0.4185	0.1751	0.0025	2.40	0.08
Facilities for Learning	0.4200	0.1764	0.0013	1.21	0.15
Educational Environment	0.4201	0.1765	0.0001	0.12	0.12
Gender	0.4202	0.1765	0.0000	—	-0.02

** $p < 0.01$

The picture in Jammu was similar to the one observed in most other States so far as the maximum contribution to R^2 was concerned. Differences in pupil ability represented by the score on Word Knowledge explained the maximum variability in either of the criterion variables. 'Home background', which included parents' education, father's occupation, caste, etc., was the second most important variable. It also had a reasonable 'r' with both Reading Comprehension and Arithmetic.

The third common variable - with respect to two criterion variables was 'Time Watch TV'. It was expected to have a more direct bearing on achievement in language but as its impact on Arithmetic was observed in several States, it is suspected to be related to the economic conditions of the family for which there was no direct measure. 'Father's occupation' and 'education' were the two indirect measures; perhaps material goods at home was a more direct index.

The language spoken at home being the same as the medium of instruction in the schools made a greater

difference to Reading Comprehension than to Arithmetic. It was as would be expected. Nearly 80% children reported the home language to be different than Hindi in which they took the tests. The age of the child was found to make a significant contribution to R^2 in Jammu, it had not played any role in most other States.

On the other side, whether the child was a boy or a girl did not affect its achievement in school. In Jammu, the percentage of girls enrolled at the primary level was 40%¹², they were 13% in this sample. 'Educational Environment at Home' had reasonable positive 't's, but its influence, could have been subsumed by the variables preceding it, most probably 'Home Background'.

The total variance explained by differences among the home background of pupils was very close to the country average.

The relationship of 'Home Background' variables with the achievements of pupils was studied in Tables 7.11(a) and 7.11(b). The explained variance of 27% for Reading Comprehension and 18% for Arithmetic, were the same as the median values for the country. The impact of the differences in the home background was quite moderate, the observed differences seemed comparable to those noted in any other State in spite of the fact the sample from the State was taken from a small region. A similar exercise of analysing the relationship of school-related variables was also undertaken. All information available about the policies and practices being followed in the schools, along with the qualifications and experience of the headmasters, was regressed against achievement on the two criterion variables.

The school means differed from each other only a little less than the scores obtained by the pupils. The standard deviation of the distribution of 110 school means was 6.8 scores as compared to the 7.9 of 808 pupils.¹³

Apart from the schools being genuinely different from each other in availability of physical and academic facilities or the clientele they served, school means could also be as large or as small as the scores of the pupils because of the small number of students responding to tests in some schools. The average number of the pupils answering the tests in a school was only 7.3 in the State.

Although all the thirty-one variables given in the list at the end of the report were regressed with the two criteria, in the two tables given below only those which contributed statistically significant increment to R^2 and a few more down the line were retained. The total contribution to R^2 was 38% and 35% for Reading Comprehension and Arithmetic, respectively. It was much higher than the total variance explained by the home-related variables. Either the quality of the schooling varies a great deal in

the State or the differences in some of the pertinent variables related to pupil background were narrow. On the face of it, the distribution of 'home background' variables did not look very different when compared with the same in other States. Some apparent differences among schools were noticed, and the same have been described in the relevant portion of the report. Out of these, the school being primary only or a part of middle or secondary school did not seem to make any difference.

Table 7.12 (a)

CONTRIBUTION OF SCHOOL-RELATED VARIABLES TO ACHIEVEMENT IN READING COMPREHENSION

Variable	R	R ²	Increment in R ²	F	t
Location	0.4873	0.1500	0.1500	16.76	-0.39
Operation Blackboard	0.4494	0.2020	0.0520	6.12	0.23
Professional Training	0.4914	0.2415	0.0395	4.84	0.24
Rooms per Class Group	0.5261	0.2771	0.0356	1.53	0.23
Age of the Pupil	0.5448	0.2968	0.0197	2.55	0.10
PTA	0.5565	0.3097	0.0130	1.69	0.14

* $p < 0.05$, ** $p < 0.01$

Table 7.12(b)

CONTRIBUTION OF SCHOOL-RELATED VARIABLES TO ACHIEVEMENT IN ARITHMETIC

Variable	R	R ²	Increment in R ²	F	t
Location	0.3800	0.1441	0.1441	16.03*	-0.48
Rooms per Class Group	0.4186	0.1752	0.0308	3.51	0.18
Total Teaching Exp	0.4531	0.2053	0.0301	3.52	0.19
Age of the Pupil	0.4728	0.2235	0.0182	2.16	0.10
Time Given (Lang.)	0.4981	0.2481	0.0246	2.97	0.12
Operation Blackboard	0.5746	0.2619	0.0168	2.05	0.15

** $p < 0.01$

While a smaller R^2 for Arithmetic was expected in Table 6.13, it was hypothesised to be higher than that obtained for Reading Comprehension in Table 6.14. Actually, it was not so. Only the difference in case of the former was bigger than the difference for the school-related variables.

In Jammu, the only variable that consistently contributed a significant variance to R^2 was 'Location of the School'. Significant and very large differences in the mean scores (total) of urban and rural children have been commented upon earlier. It would be difficult to say whether the rural child performed worse because his home environment was less conducive to learning or because the school was less efficient than its counterpart in the urban area.

¹² The Fifth All India Educational Survey, 1986

¹³ The corresponding country medians were 6.4 and 7.9, respectively

No other variable made a significantly large contribution to variance related to difference in achievement in Arithmetic but several added small values of R^2 to take the total from 14% to 36%

So far as differences in achievement in Reading Comprehension are concerned, 'Operation Blackboard', 'Professional Training of the Headmaster' and 'Availability of space per class group' seemed important. That 'Operation Blackboard' made a difference to achievement in language and not in arithmetic was noticed in some other States as well. It was likely that the teaching of mathematics, continued to remain textbook - based, while the availability of additional material made a difference to the learning of language.¹⁴ Operation Blackboard had been extended to 65% of the schools in the sample.

The contribution of 'Professional Training of the Headmaster' towards achievement in language alone could not be interpreted easily. The variability existed in qualifications, but why should it affect only the learning of language? The simple coefficient of correlation was not too low, either. On the average, availability of space was not too poor, but differences could exist between schools. In the case of this variable, impact on achievement in Arithmetic was noticeable. It was likely that the variable represented general availability of the facilities in the school.

In Jammu, more variance in achievements of pupils was explainable by school-related rather than by home-related variables. The former were not as highly associated with achievement in arithmetic as the latter.

¹⁴ It might also have made a difference to the learning of Environmental Studies I and II, which were not under consideration in this study.

Table 7-A
INTER CORRELATIONS OF PUPIL-RELATED VARIABLES AND ACHIEVEMENT

[illegible]

Table 7-8

INTER CORRELATIONS OF SCHOOL-RELATED VARIABLES AND ACHIEVEMENT

[illegible]

Karnataka

Karnataka was requested to administer the tests and questionnaires to nearly 6000 pupils studying in approximately 300 schools selected from four districts in different regions and the capital city of Bangalore

Table 8.1

SAMPLES PLANNED AND RETAINED FOR ANALYSIS

Region	No. of Schools	No. of Pupils
Capital City	30 ¹	750
	32 ²	519
Bangalore (District)	62	118 ³
	62	955
Belgaum	75	1371
	79	1241
Gulbarga	64	1232
	58	778
Mysore	77	1563
	82	1378
Total	308	5898
	313 ¹	4874

The State returned data for nearly 5,500 pupils from 313 schools but some data had to be dropped at various stages due to, non-response to tests the scores on which were used as criterion variables, non-availability of a School Questionnaire or the errors made in recording. The descriptive data for pupils is based on 4,876 observations - a negligible difference from the final sample of 4874 retained for difference between various groups and regression analysis. The responses of 278 schools were considered in describing the state of schools or the profile of the headmaster; data from only 271 schools were entered for regression analyses.

The proportion of pupils whose data have been analysed was the highest from Mysore, followed by

Belgaum.⁴ Incidentally, the mean achievements of pupils from these two regions were also high, giving the State some advantage in the overall average.

To be able to judge how representative the sample of schools and pupils were of their respective populations, some of the statistics obtained from this sample have been compared with the same obtained in the Fifth All India Educational Survey, 1986.

Table 8.2

SAMPLE AS COMPARED TO THE POPULATION-

Variable	Percentage	
	1986 Survey	The Sample in the Study
Primary (only) Schools	61.2	14.8 ⁵
Girl Students	44.9	44.2 ⁶
Scheduled Caste Students	15.8	14.7 ⁶
Scheduled Tribes Students	3.5	5.0 ⁶
Women Teachers	26.1	44.8 ⁷
Trained Teachers	91.3	97.8 ⁷

There was a glaring deviation in the percentage of primary schools which had primary sections only in 1986, and the schools in the sample. This could be due to a large number of primary schools having been raised to the level of Class VII in the State in the last five years. There was an increase in the percentage of women teachers; the trend was in the expected direction. The proportion of women teachers was expected to rise after the National Policy of Education of 1986, which desired that one of the two teachers -- the minimum number of teachers in the primary school -- should be a woman. This deviation along with a larger percentage of trained teachers could also be related to the phenomenon of a very high percentage of middle schools in the sample.

1 The numbers planned

2 The numbers entered in the analyses

3 Data from only 278 schools was analysed

4 Regarding the low average of number of pupils from Bangalore, the State Coordinator explained "The time selected for the test administration was the lag-end of the academic year, that is, March, where in almost all the school annual examinations were completed."

It was a period of semi-vacation when the attendance is very poor. That is the reason for the low percentage of turn out of students to take up the tests. This may also have a bearing on the poor performance of the children in the tests."

Source

5 The School Questionnaire

6 The Pupil Questionnaire

7 The Teacher Questionnaire

The Tests in Karnataka

Karnataka, like other States where the medium of instruction is a language other than Hindi, translated five of the seven tests meant for pupils and prepared two, namely, the ones for structure of a sentence and for spelling. The State had also participated in the try-out of the material and had, thus, influenced the selection of items to some extent. The tests finally proved very difficult for the State as is apparent from the spread of the difficulty values of the items.

Table 8.3

DIFFICULTY VALUES OF THE ITEMS

Pass Percentage	Arith	RC(P)	RC(S)	WK	A.W	SS	Spell
0 - 9	—	—	—	—	1	—	—
10 - 19	14	8	4	—	4	—	3
20 - 29	13	14	8	4	13	2	4
30 - 39	6	15	3	25	5	10	8
40 - 49	2	4	0	9	—	6	7
50 - 59	3	3	1	1	1	—	3
60 - 69	2	—	—	1	—	—	—
Median	24.1	29.5	24.5	35.9	24.9	36.5	36.4

The median difficulty value of four out of seven tests was less than 30%. The two tests constructed by the SCERT, Bangalore, were somewhat easier and had median difficulty values around 36%. The other test with a median pass percentage of 36% had only two alternatives to select the correct answer from, and would tend to have higher apparent pass percentages because of chance correct answers. The test, consisting of out-of-context words, was also vulnerable to changes in the difficulty level in translation. In none of the tests, the pass percentage on any item was higher than 69.5%. The test in arithmetic proved to be the most difficult with pass percentages of more than one-third of the items being lower than 20%. Half the test items had difficulty indices less than the chance percentage of success, i.e., 25%.⁸

The median discrimination index varied from 38% for the test in arithmetic to 78% for the test on spelling. It may be mentioned that Karnataka was in the fourth quartile in the examinations conducted for selection of pupils for admission to Navodaya Vidyalayas.

The Groups in the Study

The Pupils

The data obtained from 4,874 pupils were studied with a

view to estimate levels of learning after four years of schooling. Sixty-eight per cent of these students came from rural areas; 44 per cent were girls. Fifteen per cent belonged to Scheduled Castes, 5% to Scheduled Tribes, and another 28% to Backward Classes. The fathers of 7% of these pupils were professionals. Sixty-four per cent of the fathers were either illiterate or had studied only up to Class V. The mothers in this category were as high as 79%, only 7% fathers and 1% mothers had received college-level education. Twenty-five per cent of the children came from families with more than four children; 30% came from homes which had small families.

Thirty-three per cent children had some kind of pre-school education. An equal percentage reported that the language spoken by them at home was different from the medium of instruction at school, i.e., Kannada. Ten per cent children said they had only some of the textbooks and inadequate other study material. Twenty-eight per cent helped their parents with household work for two or more hours per day.

Forty-eight per cent children reported receiving some assistance with their studies from members of their families, 19% had some place where they could sit and study. Seventy per cent children reported attending school regularly but 7% missed it frequently.

A newspaper was received in 24% of the homes and magazines in 19%. Seventy-four per cent of the homes had no books other than textbooks.

Thirty-even per cent children said they read some books other than their textbooks, and 35% reported watching TV, varying from one to two hours daily.

As a total group, children from Karnataka seemed to enjoy some apparent advantages; a smaller proportion (20% only) belonged to deprived groups and a substantial percentage (33%) had attended some pre-school. But on the other hand, 33.5% reported the language spoken at home to be different from the medium of instruction at school.

The Teachers

Five hundred and seventy-one teachers responded to the Teacher Questionnaire. The following statements are based on their responses. Sixty-six per cent of the teachers were based in the rural area; 45% of them were women; this statistics was very different from that of 26% women teachers reported in the survey conducted in 1986. A plausible reason, i.e., the greater drive to provide a woman teacher to each primary school has already been mentioned.

⁸ The State Coordinator wrote: "Responding to alternative response questions numbering more than 30, the fatigue factor, the concentration of the respondents and then age also count. Had the children been trained to respond to these types of tests then the performance and the results might have been entirely different (a hunch)." In another context, the Coordinator had written: "All the officers of the Working Team of the Project at DSERT personally went through the report and to the (best of the) knowledge of the team, the report just suits the state as we envisaged."

The majority of the teachers -- 81% -- had studied up to the secondary or senior secondary level; 14% of them were graduates; only 5% had not studied up to Class X. Seventy-four per cent had received two years of professional education and another 15% one year of training suitable for teaching young children; nearly 8% reported having a B.Ed degree. Only 55% of them had received any in-service education although 60% of them had been teaching for more than 10 years.

Eighty-four per cent teachers resided quite close to their schools, thus spending less than an hour travelling to and from the school, only 1.5% reported spending more than three hours for this purpose. Seventy-five per cent teachers had their own copies of textbooks, another 17% had the same from the library, 41% had their own dictionary, it was available to another 49% in the library. Only 10% said they had no access to a dictionary. Regarding teaching, a fairly large percentage (33%) said they adopted new teaching practices, 91% thought that the standard of achievement would improve thereby. Only 2% teachers said they had rarely used study material other than textbooks; 30% reported using them frequently. Seventy-seven per cent teachers had developed some audio-visual aids for their pupils, a large proportion of 83% had involved their students as well in this activity.

Ninety-two per cent teachers carried out a monthly evaluation, but the majority used it only for promoting students to the next class. Eighty-nine per cent of the teachers said they helped the weak students themselves but 10.5% asked parents to arrange tuition. A large percentage (96%) checked pupils' homework regularly. Only 40% teachers said that the pupils rarely asked questions in the class.

On the average, the teachers in Karnataka were educated up to the expected level and had the minimum essentials like textbooks. They reported following useful practices, but the achievements of the children in the State were quite poor.

The Headmasters

Ninety per cent of the headmasters were more than 35 years of age, half of them being above 50 years. A small 10% were young, that is, less than 35 years in age. The majority of the headmasters (75%) had taught for more than five years. A fairly substantial percentage (25.5) reported having received professional training suitable for teaching secondary classes. This, however, needs to be seen in the light of the fact that a very large number

of schools in this sample were middle schools. Two per cent headmasters had worked in this capacity for more than 10 years; 51% of them were quite new having been headmasters for less than five years.

The Schools

Data from 278 schools was used for analyses; of these only 69% were from rural areas. Seventy-five per cent were run by the State or the Central government. Twenty-two per cent were private aided schools, with another 2% being totally private, which was a fairly large statistic for this level of education. Only 91% of the schools had co-education⁹. Eighty-seven per cent had been in existence for more than 20 years; only 1% had been started recently, i.e., during the past six years.

Regarding physical facilities, 59% of the schools had a room for the headmaster, and 75% for the teachers in general. Sixty-five per cent had the facility of drinking-water being available, 40% had urinals for girl students.

Twenty-four per cent of the schools had pre-primary sections. The 'No Detention' policy was followed up to Class III by 41% and up to Class IV by another 6% schools. Operation Blackboard had not been implemented in 84% of the schools¹⁰. The existence of a Parent Teacher Association had been reported by only 29% of the schools.

The schools in the sample had been well established. Compared to other States they had more physical facilities.

Achievements of Pupils

The following statistics are based on the responses of 4,874 pupils who responded to the seven tests.

Table 8.4

ACHIEVEMENTS OF PUPILS

Test	Arith. (40)	RC(P) (44)	RC(S) (16)	W.K. (40)	A.W. (24)	S.S. (18)	Spell. (25)	Total (207)
Mean score	11.0	13.3	4.0	15.1	6.4	6.8	9.2	65.8
SD	6.5	7.6	3.2	9.1	4.2	4.3	6.8	
Score as Percentage	27.5	30.2	25.0	37.7	26.7	37.8	36.8	31.8
KR-20	0.85	0.87	0.76	0.91	0.77	0.82	0.92	
All India	41.2	45.4	43.1	49.5	41.7	57.8 ¹¹	42.8 ¹¹	45.2
Median as Percentage								

None of the averages went beyond 38%, the median percentage was only 30%. Even on the two tests con-

⁹ All these statistics were probably influenced by the structure of the school (I-VII). It is more common to have private aided, private and single-sex schools beyond the primary level. Karnataka has reported 85% of the schools in the sample as having Classes I to VII.

¹⁰ This could also be due to the fact that the schools in the sample were middle schools.

¹¹ Tripura is excluded. The content of these two tests was not common in all States.

structed by the SCERT, the mean scores were 38% and 37%, respectively.

This was the picture obtained after the data from as many as 35 schools had been dropped. There was no apparent reason to suspect that dropping of some of the data would increase the mean score, even by a small difference. What follows in the next table gave support to this direction of thinking.

A small sample of 536 pupils of Class V, selected from some of the schools of the sample, were administered the same test battery. The purpose was to study the gain in one year. The mean scores of pupils from Classes IV and V are compared in the following table.

Table 8.5

MEAN ACHIEVEMENTS OF PUPILS — CLASSES IV AND V

Class	<i>Arith</i>	<i>RC(P)</i>	<i>RC(S)</i>	<i>WK</i>	<i>AW</i>	<i>SS</i>	<i>Spell</i>	<i>Total</i>
IV (4874)	11.0	13.3	4.0	15.1	6.1	6.8	9.2	65.8
V (536)	11.3	13.9	4.0	15.1	6.2	6.0	8.1	62.9

Although the statistical significance of the differences was not worked out, the picture was very dismal. In five out of the seven tests, children of Class V scored lower than those of Class IV. The direction of this difference was maintained in the total score, with increased difference. With 85% of the schools in the sample having Classes I to VII, the possibility of samples being from very different schools was ruled out.

It was felt that since all parts of the State were not comparable economically or educationally, the achievements of pupils should also be studied region wise. The data could easily be organised according to the regional divisions which were used for selecting a representative sample from the State.

The highest achievement was noticed for the district of Mysore, followed by Belgaum, between these two, the difference was quite large. Bangalore district had the lowest achievement. There was a difference between the mean achievement of children of Bangalore district and Bangalore city in favour of the latter.¹² As compared to some other States, the differences between the regions were not considered very large.

The achievement of children on two tests, namely Arithmetic and Reading Comprehension (paragraphs), were studied objective-wise, and in case of Arithmetic topic-wise also.

Table 8.7

ACHIEVEMENT IN ARITHMETIC — OBJECTIVE-WISE

<i>Objective</i>	<i>Mean</i>	<i>SD</i>	<i>Mean as Percentage</i>
Knowledge (19) ¹³	5.5	3.3	28.9
Understanding (12)	3.5	2.3	29.2
Application (9)	2.0	1.7	22.2
Total (40)	11.0	6.5	27.5

No difference was observed between mean achievements on items testing Knowledge or Understanding but the average for 'Application' items was substantially lower than either of the former two.

Table 8.8

ACHIEVEMENT IN ARITHMETIC — TOPIC-WISE

<i>Topic</i>	<i>Mean</i>	<i>SD</i>	<i>Mean as Percentage</i>
Time (3)	0.8	0.9	26.7
Factors and Multiples (7)	1.6	1.4	22.8
Fundamental Operations (12)	3.4	2.2	27.5
Weights and Measures (4)	0.9	0.8	30.0
Fractions (5)	1.1	1.2	22.0
Decimals (7)	2.2	1.6	31.1
Unitary Method plus others (3)	1.2	0.9	40.0
Total (40)	11.0	6.5	27.5

Table 8.6

ACHIEVEMENTS OF PUPILS — REGION-WISE

Region		<i>Arith</i>	<i>RC(P)</i>	<i>RC(S)</i>	<i>WK</i>	<i>AW</i>	<i>SS</i>	<i>Spell</i>	<i>Total</i>
Capital	Mean	9.4	13.0	3.8	12.8	6.2	6.1	8.6	59.9
City (519)	SD	5.3	6.3	2.8	8.6	3.4	4.0	6.3	
Bangalore	Mean	9.0	10.9	3.5	13.3	5.5	5.2	7.1	54.5
District (955)	SD	5.7	7.0	2.9	8.8	3.8	3.6	6.2	
Belgaum	Mean	12.2	13.9	4.1	16.0	6.3	6.9	9.7	69.1
(1244)	SD	7.5	8.3	3.5	9.2	4.1	4.3	6.8	
Gulbarga	Mean	9.5	12.1	4.0	12.8	6.3	6.4	7.6	58.7
(778)	SD	6.7	8.9	3.4	10.1	4.8	4.4	6.5	
Mysore	Mean	12.7	15.3	4.5	17.6	7.3	8.3	11.3	77.0
(1378)	SD	5.3	6.2	3.0	7.8	4.3	4.4	6.8	

¹² The State Coordinator wrote "the reason being concentration of a large number of private aided and unaided institutions".

¹³ The maximum possible score.

Table 9-B

INTER CORRELATIONS OF SCHOOL-RELATED VARIABLES AND ACHIEVEMENT

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39					
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Madhya Pradesh

Nearly 7,000 students from 400 primary sections (mainly primary schools) were to be tested in Madhya Pradesh. This sample of schools was selected from seven regions and the capital city of Bhopal. The State returned data for nearly 4,000 pupils from more than 400 schools but, after scrutiny, the data from as many as 124 schools with an enrolment of 1,021 pupils were dropped from the final analysis. These were dropped mainly for observed zero or very low standard deviations or many unattempted tests. The data from 2,952 pupils of Class IV from 287 schools were retained for final analyses.

Table 10.1

SAMPLE PLANNED AND ENTERED IN ANALYSES

Region	No. of Schools		No. of Pupils	
Capital city (Bhopal)	18 ¹		450	
Gwalior		16 ²		214
	40		667	
		37		311
Sagar	55		952	
		50		615
Rewa	49		811	
		38		589
Ujjain	65		1166	
		41		470
Indore	36		684	
		16		210
Hoshangabad	73		1213	
		30		276
Bastar	63		1071	
		59		467
Total	399		7014	
		287		2952

The lowest obtained ratio of pupils, from whom data have been retained and the numbers expected were from Hoshangabad and Indore. The average achievement of pupils from these two regions was high (Table 10.8). A relatively higher loss in numbers in the two regions would thus affect the State mean. In all other regions, except Sagar, the proportion of pupils was close to the State average of 42% of the sample (retained). The

mean score of subgroup from Sagar was 71.1 as compared to the average of 77.6 for the entire State. This also lowered the State average.

How does the obtained sample compare with the population? In the following table some of the statistics obtained from this sample have been presented along with those recorded in the Fifth All India Educational Survey conducted by the NCERT in 1986.

Table 10.2

SAMPLE AS COMPARED TO THE POPULATION

Variable	Percentage	
	1986 Survey	Sample in the Study
Primary (only) Schools	95.0	100.0 ¹
Girl Students	38.4	47.0 ¹
Scheduled Caste Students	18.4	13.9 ¹
Scheduled Tribe Students	18.5	17.8 ¹
Women Teachers	21.6	28.4 ³
Trained Teachers	69.0	68.0 ⁴

The percentages for girls and SCs were at variance with the corresponding figures reported in the Fifth All India Educational Survey. In primary schools in 1986, the girls were 38% only. As the difference between the sample statistics of 1991 and the population percentage of 1986 was in the expected direction, it was not considered as a source of bias in the sample. However, the difference of 4% (less) for the SC sample is worthy of attention. It may be recalled that data from a large number of schools (124) had to be dropped for one reason or the other, mainly because of near zero standard deviations in the school. Of the sample entered in analyses, the achievement of the SC group, on the average, was lower only to that of the Backward Classes.

It would, thus, be difficult to say whether the lower percentage of the SC group was due to defective sampling or to elimination of data from some schools. A higher percentage of women teachers in the present sample is in the expected direction.

1 The number planned.

2 The number returned.

Source

3 The School Questionnaire

4 The Pupil Questionnaire

5 The Teacher Questionnaire

Tests in Madhya Pradesh

As the original tests were produced in Hindi, Madhya Pradesh, as any other State where the medium of instruction was Hindi, used them as they were. It may also be mentioned that MP did not participate in the try-out of the tests.

The tests proved somewhat difficult for the State as is apparent from the average difficulty value of the items

Table 10.3

DIFFICULTY VALUES OF THE ITEMS

Pass Percentage	Arith	RC(P)	RC(S)	W K	A W	S S	Spell
0 - 9	-	1	-	-	-	-	-
10 - 19	7	7	-	-	2	-	1
20 - 29	12	10	2	4	6	-	6
30 - 39	9	14	7	11	8	7	9
40 - 49	8	10	7	10	6	5	6
50 - 59	2	2	-	10	2	6	2
60 - 69	2	-	-	6	-	-	1
Median	30.6	32.4	38.1	45.5	34.5	43.5	35.6

The median values varied from 30.6 to 45.5%. Only 16% of the items in the entire battery had pass percentages above 50%. In none of the tests, the difficulty value of any of the items went beyond 69.5%. The Discrimination Indices however were satisfactory, the median values varying from 45.3 to 52.2.

The Groups in the Study

The Pupils

All the pupils came from primary schools only, 75% were from rural⁶ areas, 47% were girls. Caste-wise, 4% children belonged to the Backward Classes and another 32% to the SC/ST groups, only 25% reported as coming from the 'Others' group. The average age of the children was 10.1 years. Fifty per cent children reported agriculture as their fathers' occupation. Twenty-seven per cent of the fathers and 68% of mothers were illiterate, 38% fathers and 4% mothers had education beyond primary school. Only 9% children came from small families of two or less children. Nearly half the children helped their families for two or more hours each day.

Eleven per cent of the pupils reported having received some pre-school education; 22% said that the language spoken at home was different from the language used as the medium of instruction, i.e., Hindi. Regarding the other variables that were likely to facilitate

learning, the statistics from Madhya Pradesh were among the lowest. 'Availability of Most Textbooks' and other educational material was reported by about 50% of the pupils only. Similarly, the percentage reporting regular attendance was 47%. Approximately one in every four children had the facility of some place for study as also help with their homework. Very few children reported availability of books at home, 20% said they read something other than their textbooks; 31% watched TV programmes for one to two hours a day.

The Teachers

The teachers from Madhya Pradesh had, on the average, received higher education than the teachers in other States, 45% of them were graduates, only 3% had not studied up to Class X. Thirty-two per cent⁷ teachers did not indicate any kind of professional training, they could be untrained. Even so, this statistic was lower than the one reported by headmasters. Fifty-five per cent had received some in-service education. Most of them were young in service, with 58% reporting having taught for 10 or lesser number of years.

Twenty-eight per cent of the teachers were women, while the proportion of girl students had risen to 47%. The majority were young, 60% of them being less than 35 years of age. More of them resided near the school they worked in, as 56% reported having to spend less than half an hour travelling to and from school, and another 27% only one hour for this purpose.

Only 40% of the teachers had their own copies of textbooks, 27% had library copies, and the rest 33% borrowed them from the pupils, probably on the spot; 44% did not have access to a Hindi language dictionary.

Thirty per cent teachers said they had never developed any teaching-learning material (audio-visual aids); 21% did not use material other than textbooks; 81% did not adopt any new teaching strategy in teaching.

Twenty per cent teachers reported that students did not ask any questions in the class. All teachers helped weak students. More than 97% teachers reported evaluating their pupils every month but forty-one per cent teachers used evaluation for one purpose only, probably for promotion.

The Headmasters

The headmasters in Madhya Pradesh were one of the youngest lot, 37% of them being less than 35 years of age. Correspondingly their teaching experience was less

⁶ The corresponding statistic in the Fifth Survey was 71%. The larger percentage after an interval of five years could be due to increased enrolment in rural areas.

⁷ As per information collected on the School Questionnaire, 42% teachers are untrained. It is likely that the teachers asked to respond to the questionnaire were identified by the headmasters for a better picture and not strictly according to the procedure laid down.

than 15 years. Of these, 9% had teaching experience of less than five years.

The most striking statistic was absence of professional training for 31% of them; this was in line with 42% teachers being untrained.

The Schools

Data from 287 schools was analysed; of these 75% were located in rural areas. All of these were primary schools, i.e., having Classes I to V only; 97% were managed by the State or Central governments; only 3% were private schools. Nearly all schools, namely 95%, were co-educational; the other 5% did not have any girl student. Only 9% of the schools reported having pre-primary sections. None of the schools in the sample was newly opened but 20% had been in existence for only for 10 or lesser number of years.

Table 10.4

ACHIEVEMENTS OF PUPILS

	Arith (40) ^a	RC(P) (44)	RC(S) (16)	W.K. (40)	A.W. (24)	S.S. (18)	Spell (25)	Total (207)
Mean	13.0	14.4	6.2	18.4	8.5	7.9	9.2	77.6
SD	7.8	8.7	4.4	8.4	5.5	4.5	6.4	
Mean as Percentage	32.5	32.7	38.7	46.0	35.4	43.9	36.8	37.5
KR-20	69	90	87	89	86	83	90	
All India	41.2	45.4	43.1	49.5	41.7	57.8 ^b	42.8 ^b	45.2
Median as Percentage								

As regards physical facilities, 20% schools had provision for drinking-water, 22% had urinals for girls.

Sixty-two per cent schools did not have a room for the headmaster and 77% reported non-availability of a staff room.

Only 13% schools had Book Banks. Ninety-two per cent followed the 'No-Detention' policy upto Class II only, but 7% did not detain pupils up to Class IV. Implementation of Operation Blackboard was reported by less than 50% of the schools. Nineteen per cent school, reported having a Parent Teacher Association.

The schools in Madhya Pradesh could not be said to be provided with the basic minimum facilities.

Achievements of Pupils

The average achievement of pupils remained less than fifty per cent in all the seven tests; the median was at

36.8%

The achievements of children on two tests, namely Arithmetic and Reading Comprehension (paragraph), were also seen objective-wise, and in the case of arithmetic, topics-wise too.

Table 10.5

ACHIEVEMENT IN ARITHMETIC — OBJECTIVE-WISE

Objective	Mean	SD	Mean as Percentage
Knowledge(19)	6.5	4.1	34.2
Understanding(12)	3.9	2.7	32.5
Application (9)	2.7	1.9	30.0
Total (40)	13.0	7.8	32.5

The objective-wise means were in the expected direction. All were low as the achievement on the tests on the whole was also low.

Table 10.6

ACHIEVEMENT IN ARITHMETIC — TOPIC-WISE

Topic	Mean	SD	Mean as Percentage
Time (3)	1.2	1.0	40.0
Factors and Multiples (7)	2.2	1.7	31.4
Fundamental Operations (12)	3.6	2.7	30.0
Weights and Measures (3)	1.3	1.0	43.3
Fractions (5)	1.1	1.2	22.0
Decimals (7)	2.2	1.7	31.4
Unitary Method (3)	1.5	1.0	50.0
and Others			
Total (40)	13.0	7.8	32.5

The lowest percentage of scores was in 'Fractions', followed by 'Fundamental Operations'. The latter is taught from Class II onwards but the children failed to get mastery over it. Several questions on this topic were on understanding concepts but even a straightforward sum of addition had been answered correctly by only 74.5% pupils. The items on 'Weights and Measures' were found relatively easy by the pupils, their daily-life experiences could be contributing to their learning. The highest percentage was for 'Unitary Method', an area which is taught most routinely and mechanically in the schools. Computations were involved in answering the questions, but to avoid interference of this skill, the same were kept at a very simple level.

⁸ The figure in the parenthesis gives the maximum possible score.

⁹ Tripura is omitted. The content of the tests was not common in all the States.

¹⁰ This includes:

(a) deriving meaning of difficult words from the context, and

(b) relating things at a simple level.

¹¹ This includes identifying the message or the central idea and the title of the write-up.

Table 10.7ACHIEVEMENT IN READING COMPREHENSION —
OBJECTIVE-WISE

Objective	Mean	SD	Mean as Percentage
Noting Detail (17)	6.8	4.2	40.0
Simple Comprehension ¹⁰ (13)	4.2	3.0	32.3
Inference ¹¹ (14)	3.5	2.6	25.0
Total (44)	14.4	8.7	32.7

'Noting Detail', which had the highest mean, is the one practiced most frequently in the classroom, but the achievement was disappointing. After four years of lessons in reading, pupils were expected to read and get the information to a much higher degree.

The data were scrutinized for differences, if any, by region, location, gender and caste. The findings were as follows.

The regional differences were very large. Leaving aside the capital city, the largest (total) mean was 18.6%, as high as the smallest from district Gwalior, though even the highest was only a little higher than 50%; the lowest was 21% in Bhopal.

The capital city, which would normally have a concentration of educated families, had the lowest average (20%); a possible reason could be the choice of the English-medium by the higher socio-economic/educated groups.

Table 10.9

DIFFERENCES IN ACHIEVEMENT — LOCATION-WISE

Test	Location	Mean	SD	t
Arithmetic	U	12.0	7.4	4.31*
	R	13.4	7.9	
RC(P)	U	14.2	9.3	6.6
	R	14.5	8.5	
RC(S)	U	5.4	4.4	5.54
	R	6.5	4.1	
W.K.	U	16.6	9.5	6.90
	R	19.0	7.9	
A.W.	U	8.7	5.4	1.05
	R	8.4	5.5	
S.S.	U	6.9	4.7	6.57**
	R	8.2	4.4	
Spelling	U	8.2	6.7	4.79*
	R	9.5	6.3	
RC (total)	U	19.7	12.4	2.54
	R	21.0	11.7	
T (5 + 6 + 7)	U	23.8	14.9	3.76**
	R	26.1	11.3	

** p < 0.1

The rural children did better than the urban children in six out of seven tests and in the totals for tests of Reading Comprehension and those for writing skills. In the absence of high-fee-charging English-medium schools in rural areas, the groups there remain intact, blocking selection on the basis of income and occupation of the parents, which, in turn, are likely to be positively related to achievement. The attitude of the primary school teach-

Table 10.8

ACHIEVEMENT OF PUPILS — REGION-WISE

Region	Arith	RC(P)	RC(S)	W.K.	A.W.	S.S.	Spell.	Total	
Capital City (214)	Mean	6.1	7.1	4.0	9.5	5.9	5.5	4.8	42.9
	SD	5.7	6.3	4.7	8.0	5.1	4.1	5.4	
Gwalior (311)	Mean	9.5	12.6	4.6	12.8	7.9	6.1	7.0	60.5
	SD	5.6	6.4	3.5	10.3	5.1	5.1	7.5	
Sagar (615)	Mean	11.2	12.5	5.3	21.0	5.4	7.5	8.3	71.2
	SD	5.6	5.7	4.2	5.6	3.6	2.7	5.4	
Rewa (389)	Mean	20.8	19.8	7.3	22.0	9.4	9.5	11.8	100.6
	SD	10.7	11.1	4.9	8.1	5.6	4.2	6.6	
Ujjain (470)	Mean	11.7	12.4	5.3	17.1	7.9	6.8	7.2	68.4
	SD	5.5	7.7	4.0	8.6	4.7	4.2	5.2	
Indore (210)	Mean	21.4	25.9	8.5	19.3	14.7	10.0	12.8	112.6
	SD	5.3	8.1	4.5	7.9	5.2	5.7	6.7	
Hoshangabad (276)	Mean	14.2	19.7	6.5	21.4	12.5	9.5	12.3	96.1
	SD	5.3	8.1	4.5	7.9	5.2	5.7	6.7	
Bastar (467)	Mean	11.5	10.8	8.3	19.0	8.7	8.5	10.2	77.0
	SD	3.9	3.6	3.8	5.1	4.7	4.9	4.7	

ers in these two areas could also be different. In the urban areas, he/she might feel as being amongst the lower social group, while in rural areas it could be just the opposite. The differences, though significant statistically, were not as large as they were over regions. The total score for urban and rural groups were 72.0 and 79.5, respectively.

Table 10.10

DIFFERENCES IN ACHIEVEMENT — GENDER-WISE

Test	Gender	Mean	SD	t
Arithmetic	B	13.9	8.6	6.44
	G	12.1	6.6	
RC(P)	B	14.6	8.6	1.27
	G	14.2	8.8	
RC(S)	B	6.1	4.6	1.11
	G	6.3	4.2	
W.K.	B	18.9	8.9	3.82
	G	17.8	7.8	
A.W.	B	8.6	5.5	1.67
	G	8.4	5.6	
S.S.	B	7.8	4.5	.58
	G	7.9	5	
Spelling	B	8.8	6.4	3.92
	G	9.7	6.5	
RC (total)	B	20.7	11.9	.51
	G	20.5	14.4	
T (5 + 6 + 7)	B	25.1	14.4	1.48
	G	25.9	14.5	

** $p < .01$

The boys achieved higher scores than the girls in tests of arithmetic and word knowledge, and the girls did better than the boys in the test in spelling. The difference in arithmetic was understandable as it reflected the expectations of the society from the girls. The trend in differences was not as consistent over the tests as was the case with location.

Out of the seven tests, the group identified as Backward Classes had the highest score in five tests, and the second highest on the other two. The first two ranks on the basis of mean scores changed position between Backward Classes and Scheduled Castes who had second highest rank on five tests and highest averages on the other two. Scheduled Tribes and 'Others' shared the third and fourth positions, with Scheduled Tribes getting the third highest scores on four tests and 'Others' on three tests. Thus, on the whole, the children from Backward Classes achieved the highest scores, followed by those from Scheduled Castes, Scheduled Tribes and 'Others' in that order. 'Others' should include all the Hindu high castes, Muslims, Christians and other minority groups. Some of these groups, particularly the Hindu high castes, have been considered to have been educated for some generations. Why did their children perform poorly? In

the urban areas, this phenomenon could be attributed to the children of the richer as well as more educated families going to English-medium schools but three-fourths of the total group was from rural areas, where the 'English-medium' schools probably did not exist.

Table 10.11

DIFFERENCES IN ACHIEVEMENT — CASTE-WISE

Test	Group	Mean	SD	F
Arithmetic	SC	12.7	5.5	121.66
	ST	10.9	4.6	
	BC	15.8	9.3	
	Others	9.9	5.8	
RC(P)	SC	13.9	5.7	65.29
	ST	11.5	6.9	
	BC	16.8	10.1	
	Others	12.6	7.4	
RC(S)	SC	8.3	5.1	110.27
	ST	5.8	3.2	
	BC	6.9	4.4	
	Others	4.0	4.0	
W.K.	SC	19.5	6.9	30.63
	ST	16.6	7.9	
	BC	19.7	8.4	
	Others	16.7	9.0	
A.W.	SC	9.4	4.9	36.62
	ST	8.1	4.9	
	BC	9.3	5.9	
	Others	6.8	5.2	
S.S.	SC	8.7	4.9	70.67
	ST	6.5	4.4	
	BC	8.9	4.5	
	Others	6.6	3.4	
Spelling	SC	9.4	6.5	74.17
	ST	8.5	5.2	
	BC	10.9	4.8	
	Others	6.6	5.6	
RC (total)	SC	22.2	9.0	76.36
	ST	17.4	9.2	
	BC	23.7	13.6	
	Others	16.7	9.9	
T (5 + 6 + 7)	SC	27.4	14.1	73.4
	ST	23.0	11.3	
	BC	29.0	15.5	
	Others	20.0	12.6	

** $p < .1$

Factors Related to Pupil Achievement

All the pupil-related and home-background-related variables were regressed against achievement in Arithmetic and Reading Comprehension. But before this step, several independent variables were combined to obtain three composite scores before the final analysis.

The regression coefficients for the variables entered in the composite variables are given below.

Home Background.

	<i>RC</i>	<i>Arith</i>
Location	0.68	1.00
Father's Occupation	-0.68	-0.33
Caste	-0.98	-0.23
Father's Education	0.66	0.38
Mother's Education	0.48	0.59
Number of Siblings	1.91	1.63
<i>R</i>	0.18	0.18

** $p < 0.1$

'Father's Occupation' and the level of education as well as the number of siblings at home were the variables found to be related with achievement in school. In addition, 'Mother's Education' and the location (urban or rural) where the children resided also seemed to be important for achievement.

Facilities for Achievement

	<i>RC</i>	<i>Arith</i>
Attended Pre-school	2.79	-0.53
Place for Study	-4.44	-3.89
Help in Homework	1.92	1.58
Availability of Textbooks	1.16	0.19
Availability of Study Material	-0.98	-2.42
Helping Household	0.30	0.18
Regularity in Attendance	-0.43	1.19
<i>R</i>	0.23	.27

* $p < .05$, ** $p < 0.1$

The two variables which emerged to be the most significant for better achievement in school were 'Place for Study' and 'Help with Homework', probably reflecting the concern of the parents. In addition, 'Attending Pre-school' and 'Availability of Textbooks' contributed towards achievement in reading and 'Availability of Notebooks' and 'Regular Attendance in School' towards achievement in arithmetic.

Educational Environment at Home

	<i>RC</i>	<i>Arith</i>
Newspaper at Home	-2.61	-2.98
Magazines at Home	2.02	-1.20
Books at Home	-0.72	-0.14
Reads Books	-3.22	-1.30
<i>R</i>	0.15	0.15

** $p < 0.1$

Buying or reading newspapers and magazines at home were considered indicators of an educated family or parents who had an interest in reading and remaining abreast of what is happening in the world. Reading by the child would obviously give him/her an advantage in learning at school, but negative signs tend to confuse the picture.

The three composite variables and five others were regressed with achievement in Reading Comprehension and Arithmetic separately, the contributions to R^2 are given in the following tables.

Table 10.13(a)

CONTRIBUTION OF PUPIL-RELATED VARIABLES TO ACHIEVEMENT IN READING COMPREHENSION

<i>Variable</i>	<i>R</i>	<i>R²</i>	<i>Increment in R²</i>	<i>F</i>	<i>t</i>
Word Knowledge	3700	1369	1369	467.70	.37
Age	4858	2360	0991	382.2	-.26
Home Background	5024	2524	0164	64.86	-.17
Facilities for Learning	5201	2705	0181	73.23	.22
Similar Language	5269	2776	0071	28.69	-.13
Educl. Environ	5276	2783	0007	2.83	.11
Gender	5278	2786	0002	0.97	-.01
Time Watch TV	5280	2788	0002	0.81	-.05

** $p < 0.1$ **Table 10.13 (b)**

CONTRIBUTION OF PUPIL-RELATED VARIABLE TO ACHIEVEMENT IN ARITHMETIC

<i>Variable</i>	<i>R</i>	<i>R²</i>	<i>Increment in R²</i>	<i>F</i>	<i>t</i>
Word Knowledge	4834	2337	2337	899.60	.48
Similar Language	4958	2458	0121	74.34	-.10
Facilities for Learning	5057	2558	0099	39.26	.16
Home Background	5137	2639	0081	32.51	.11
Time Watch TV	5208	2712	0073	29.62	-.16
Gender	5258	2764	0052	21.28	-.12
Age	5268	2775	0010	4.24	.03
Educl. Environ	5270	2777	0002	.84	.10

N = 2951

* $p < .05$, ** $p < 0.1$

'Educational Environment' did not contribute to enhancing either of the two R^2 in Madhya Pradesh. The composite variable was arrived at by combining statistics on availability of newspapers, magazines, books at home, and the child reading something other than textbooks. Less than 10% children reported availability of either newspapers or magazines. Books were available only in

20% of the homes. Restricted variance in the variable itself could have lowered the correlation.

Differences in basic ability as represented by the scores on Word Knowledge contributed most to the variance in achievement. The other important variables were 'Home Background', 'Facilities for Learning', 'Similarity of Language' and 'Age'. The last one had a higher negative correlation with Reading Comprehension but a very small positive correlation with Arithmetic. 'Similarity of Language' had negative correlation with both the criterion variables.¹² Twenty-two per cent of the children reported their home language to be different from Hindi which is the medium of instruction in the schools. 'Time Watch TV' and 'Gender' were correlated negatively with both the criteria, the values being higher for arithmetic. The difference in achievement in arithmetic in favour of boys was noticed in Table 10.10.

As compared to several other States the values of R were relatively high. These were approximately the same for both the criteria.

The impact of variables pertaining to home background and other individual pupil-related variables, including an index of mental ability, on the scores obtained by them on the tests of reading comprehension and arithmetic was studied in Tables 10.13 (a) 10.13 (b). In Madhya Pradesh, both the R^2 s were 28% higher than the respective median values for all the States.

In addition to the differences the individual is born with — such as high or low intelligence, gender, caste or even location and the social-economic and educational status of the family — the kind of school a child attends would also contribute to his/her achievement on the tests.

The variability among schools was expected to be smaller than that among the pupils or their homes, the schools being organised institutions for guiding pupil learning. Being administered by a small number of agencies, particularly in States where the number of private/private aided schools was very limited, they could be quite homogenous in the availability of facilities and the practices being followed. Nevertheless, the school means differed from each other. The differences could arise from their location, (i.e., the community they served), the type of leadership provided by the headmaster, the facilities that had become available to the school by a particular point in time, and several other factors.

In Madhya Pradesh, the standard deviation of 240 school means for the test of arithmetic was 5.9 points as compared to 7.8 for the scores obtained by nearly 3,000 pupils. The standard deviation for the school means of the State was lower than the median value of 6.4 for the

country. The median standard deviation of the distribution of scores was 7.9, the State statistic was not very different. Thus, in Madhya Pradesh, the school averages were somewhat more homogenous than in many other States.

All the school-related variables, excluding those providing information about the teachers and the practices they followed in conducting the process of education, were regressed with pupil achievement.

Table 10.14(a)

CONTRIBUTION OF SCHOOL-RELATED VARIABLES TO ACHIEVEMENT IN READING COMPREHENSION

Variable	R	R^2	Increment in R^2	F	r
Books in the Library	3000	.0901	.0901	23.55	-.30
Proportion SC/ST	.3506	.1229	.0328	8.87	-.27
Teachers Untrained	3869	.1513	.0284	7.90	.06
Pre-primary Classes	4109	.1689	.0176	4.96	.08
Time Given (Arith.)	4233	.1792	.0103	2.94	.02
Incentive Schemes	4307	.1855	.0063	1.82	-.11
Facilities for Teachers	4378	.1917	.0061	1.76	-.28
Financial Freedom	.4551	.2072	.0155	4.52	.18
Time Given (Lang.)	4622	.2136	.0064	1.88	.01
Experience as Headmaster	4680	.2191	.0055	1.60	.11
Teaching experience of Headmaster	4764	.2269	.0078	2.33	.04
Rooms per Class Group	4839	.2341	.0072	2.12	.10
Years of Existence	.4914	.2414	.0073	2.18	-.12

* $p < .05$, ** $p < .01$

Table 10.14(b)

CONTRIBUTION OF SCHOOL-RELATED VARIABLES TO ACHIEVEMENT IN ARITHMETIC

Variable	R	R^2	Increment in R^2	F	r
Books in the Library	3803	.1446	.1446	40.25	-.38
Working Days	4457	.1986	.0540	13.53	-.14
Facilities for Pupils	4715	.2223	.0237	5.72	-.21
Teachers Untrained	5058	.2558	.0335	8.14	.06
Rooms per Class Group	5452	.2972	.0414	10.12	.13
Teaching Experience of Headmaster	5592	.3127	.0155	3.66	.02
Boys/Girls/Co-ed	5687	.3234	.0107	2.51	-.08
Room for the Headmaster	5790	.3352	.0118	2.76	.26

* $p < .05$, ** $p < .01$

The two variables that made a significant contribution to R^2 consistently for both the criteria were availabil-

¹² This phenomenon has been observed in some other States as well.

ity of 'Books in the Library' and percentage of 'Teachers Untrained'. The latter made sense; the percentage of untrained teachers was high -- 42% in the State; 45% were graduates but they did not seem to improve pupil achievement. On the other hand, the situation almost suggested desperation in the recruitment of teachers. It may not be only the absence of professional education of the teachers involved but also their non-involvement as many untrained graduates could be feeling 'not settled' in the job.

It could not be understood why the number of 'Books in the Library' had a relatively high but negative 'r' with both the criteria. 'No correlation' could be understood, but the negative sign did not make any sense. All schools participating in this study were primary schools only. All correlation could not be attributed to poor performance of children in the primary sections of middle or secondary schools which could have a large number of books in the library.

Other variables that made a significant contribution to differences in Reading Comprehension were 'Proportion of SC/ST' and existence of 'Pre-primary Classes'. While the former turned out to be significant in several States, the latter was more of a special case. Only 9% schools had pre-primary classes, may be they were special in some way; the percentage of private school was also limited to 3% only.

With respect to the variability in school means in Arithmetic, 'Number of Working Days' (1989-90), an index of 'Facilities for Pupils' and availability of 'Room per Class Group' also made significant contributions to R^2 . Of these 'Number of Working Days' (1989-90) That also made a significant contribution to R^2 for Arithmetic only but the negative sign of 'r' left it incomprehensible. Availability of space as measured by 'Number of Rooms per Class Group' made some contribution to R^2 for both the criterion variables but it is significant for Arithmetic. However both the 'r's were positive.

Table 10-A
INTER CORRELATIONS OF PUPIL-RELATED VARIABLES AND ACHIEVEMENT

[illegible]

INTER CORRELATIONS OF SCHOOL-RELATED VARIABLES AND ACHIEVEMENT

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39					
100	57	78	50	-18	-27	-13	-13	-	49	10	.17	-.07	38	-77	-25	-.04	22	-15	-42	-16	17	-27	24	10	-11	06	05	-19	-16	-	-05	-15	04	-15	-06	-12	-06	-10					
100	72	43	-56	11	-43	19	-	49	-01	.67	-.49	-22	-.49	07	00	44	-45	-28	-29	52	-15	-13	16	-05	-09	-10	-.44	29	-	-03	-.04	24	-18	19	07	15	12						
100	.60	-.27	-15	-15	05	-	45	20	25	-.46	23	-70	-18	-11	.29	-.40	-.52	-.32	27	-19	-.07	09	03	-.06	-.07	-.38	04	-	-02	-.06	22	-11	11	04	15	04							
100	-.01	08	-.04	-14	-	14	06	10	-21	22	-.39	-.06	09	20	-.02	-.29	-.39	-11	-13	-17	-16	12	22	21	-.24	15	-	-12	05	20	-.05	00	04	10	11								
100	-.35	38	-.58	-	-	14	40	-.60	33	15	41	-.44	-.22	-.07	26	08	-.25	-.66	47	23	-.03	30	-.04	-.03	-10	-.33	-	-.07	-.05	12	31	-13	11	09	01								
100	04	61	-	-	-	100	04	61	-	-	31	-.23	53	-.25	-13	10	93	.78	25	00	33	-.07	-.07	05	-.04	32	16	-11	-11	-23	40	-	.16	21	07	02	19	11	12	18			
100	07	-	-	-	-	100	07	-	-	23	06	-.60	15	10	22	-.09	-.15	-.27	18	-.22	25	-.57	-.06	02	02	15	11	12	14	-.42	-	-.08	-10	-.03	03	-12	02	01	-.09				
100	-	-	-	-	-	100	-	-	-	25	-.32	38	-10	-.05	-.03	64	31	01	-.43	-.16	26	49	09	-.21	15	-20	-.36	37	07	16	-	05	14	-.07	-.09	12	-.01	06	08				
100	-	-	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
100	25	16	-13	-14	-29	-28	-.22	.47	05	-.22	-.06	10	-.29	12	11	-.26	07	05	-.09	29	-	-16	-19	06	-.16	-.07	-.09	-.09	-12	-	-14	-.01	24	12	12	12	17	08					
100	-.16	-.45	-.28	01	-.33	-.26	-.07	-.03	02	-.22	-.41	-.01	07	09	49	-.29	-.28	-.38	-.24	-	-14	19	12	-.09	24	10	11	19	-	-14	19	12	-.09	24	10	11	19						
100	-.35	-.24	-.28	58	50	50	-.35	22	-.39	53	12	08	32	-.06	-.34	-.35	-.44	56	-	-08	-.22	-.29	-.01	-.37	-.23	-.32	-.27	-	-05	-10	-.21	00	-.23	-.19	-19	-19	-15						
100	31	31	-11	04	-.09	43	17	34	-.02	31	37	-.22	-.35	-.05	-.06	48	-10	-	-05	-10	-.21	00	-.23	-.19	-19	-15	-	-06	07	04	19	00	15	07	06								
100	-.51	-.04	12	-.25	03	-.14	-.04	-.04	04	23	06	-.35	13	11	19	-.09	-	-10	16	-.01	-.02	15	04	11	-	-10	16	-.01	-.02	15	04	11	-	-10	16	-.01	-.02	15	04	11			
100	04	00	04	20	33	16	-.31	32	-.21	-20	32	-.03	-.02	03	-.07	-	-10	16	-.01	-.02	15	04	11	-	-10	16	-.01	-.02	15	04	11	-	-10	16	-.01	-.02	15	04	11				
100	85	19	06	44	03	10	09	06	27	-.02	-.23	-.23	-11	48	-	-10	16	-.01	-.02	15	04	11	-	-10	16	-.01	-.02	15	04	11	-	-10	16	-.01	-.02	15	04	11					
100	29	27	52	-.07	-10	03	31	28	17	11	-12	-.24	32	-	-10	16	-.01	-.02	15	04	11	-	-10	16	-.01	-.02	15	04	11	-	-10	16	-.01	-.02	15	04	11						
100	-.17	-12	-.53	05	21	11	35	14	-.23	-.04	-.45	40	-	-30	-.29	-15	-.07	-.25	-18	-.27	-28	-	-21	-.11	-.05	-.00	-.03	-.07	-.15	-11	-	-38	-.27	-.27	-.19	-19	-25	-29	-30				
100	58	42	52	-.22	35	-.25	-01	19	20	36	16	-	-30	-.29	-15	-.07	-.25	-18	-.27	-28	-	-21	-.11	-.05	-.00	-.03	-.07	-.15	-11	-	-38	-.27	-.27	-.19	-19	-25	-29	-30					
100	13	-18	18	25	-13	18	-30	-.29	-13	35	-	-21	-.11	-.05	-.00	-.03	-.07	-.15	-11	-	-38	-.27	-.27	-.19	-19	-25	-29	-30	-	-01	05	-.08	-.18	10	-.07	-.02	01						
100	08	-.41	-.03	-.36	-.31	11	11	60	-16	-	-01	05	-.08	-.18	10	-.07	-.02	01	-	-01	05	-.08	-.18	10	-.07	-.02	01	-	-01	05	-.08	-.18	10	-.07	-.02	01							
100	10	-16	-.09	-.41	-.35	06	23	-	-01	05	-.08	-.18	10	-.07	-.02	01	-	-01	05	-.08	-.18	10	-.07	-.02	01	-	-01	05	-.08	-.18	10	-.07	-.02	01									
100	16	07	04	-.64	-.64	-.29	13	-	-16	05	14	22	-.02	11	14	09	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11
100	59	-12	-.26	-.27	04	-.01	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	
100	01	-.08	-.09	-.15	05	-	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	
100	01	-.08	-.09	-.15	05	-	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	
100	01	-.08	-.09	-.15	05	-	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	
100	01	-.08	-.09	-.15	05	-	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	
100	01	-.08	-.09	-.15	05	-	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	
100	01	-.08	-.09	-.15	05	-	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	
100	01	-.08	-.09	-.15	05	-	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	
100	01	-.08	-.09	-.15	05	-	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	
100	01	-.08	-.09	-.15	05	-	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	
100	01	-.08	-.09	-.15	05	-	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	
100	01	-.08	-.09	-.15	05	-	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	
100	01	-.08	-.09	-.15	05	-	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	
100	01	-.08	-.09	-.15	05	-	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	
100	01	-.08	-.09	-.15	05	-	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	
100	01	-.08	-.09	-.15	05	-	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	
100	01	-.08	-.09	-.15	05	-	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	
100	01	-.08	-.09	-.15	05	-	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	-	-04	-.12	-.05	02	-.12	-10	-16	-11	
100	01	-.08	-.09	-.15	05	-	-	-04	-.12	-.05	02	-.12	-10	-16	-																												

Maharashtra

A pupil sample of 7,800 children was expected to be tested from nearly 360 schools in Maharashtra. Enrolment in the State was quite high, particularly in the urban area. The average number of pupils for whom the data were returned from each school worked out to be more than 22 - a very high figure compared to the other States.

Table 11.1

SAMPLES PLANNED AND ENTERED IN ANALYSES

Region	No of Schools	No of Pupils
Central Bombay	50 ¹	1250
	54 ²	1309
Inland Western (Ahmednagar)	76	1560
	83	1723
Inland Central (Purbandi)	49	1010
	76	1680
Inland Eastern (Amravati)	49	1030
	40	878
Eastern Bandra	47	990
	46	978
Costal Thane	90	1955
	48	1188
Total	361	7795
	347	7756

The State did not keep to the proportions allocated. The two highest achieving regions had 5 to 10 percent more sample and the lowest achieving region had 15% less sample than planned, all this would increase the mean score of the State. But a 66% increase in Inland Central region which had a lower average (not as low as Inland Eastern region had) tended to make up for this difference. When regional means were appropriately weighted according to the proportion of the sample expected, the State average worked out to be 92.8%, which

1 The number planned

2 The number retained

Source

3 The School Questionnaire

4 The Pupil Questionnaire

5 The Teacher Questionnaire

6 Compared to 63% of the expected (according to the 1986 survey) rural sample, only 54% of the pupils in the present group were from rural areas. The possibility of proportionately higher percentage of urban children studying in the primary sections of middle and secondary schools could not be ruled out.

was only one point lower than the unweighted average. One may, therefore, conclude that the total sample could be considered representative of the population of pupils in the State.

The validity of the sample was also checked by comparing some of the obtained statistics with those available from the Fifth All India Educational Survey conducted by the NCERT in 1986.

Table 11.2

SAMPLE AS COMPARED TO THE POPULATION

Variable	Percentage	
	1986 Survey	Sample in the Study
Primary (only) Schools	68.7	47
Girl Students	45.1	47.8 ¹
Scheduled Caste Students	13.9	12.9 ¹
Scheduled Tribe Students	9.1	10.6 ¹
Women Teachers	38.2	53.9 ²
Trained Teachers	89.9	93.4 ³

There was noticeable change in two of the six statistics compared in the table above. The percentage of primary (only) schools was much smaller than in 1986. Either the State had approached more middle and secondary schools or a very large number of schools had been upgraded during this interval. Both of these factors might have been operating.⁶ Simultaneously, there was an increase of 15% women teachers. It could partly be related to a larger sample from the urban areas as also to the general move to recruit more women teachers in primary schools.

A small drop of 1% in SC pupils could be ignored. The combined statistics of SC and ST pupils in this sample was not lower than the comparable figure for enrolment in 1986. Some of these statistics could also change over time as different caste groups keep asking for such

changes. The small increments in the proportion of girls and trained teachers were in the expected direction.

The sample from Maharashtra had more middle and secondary schools, it also had a higher proportion of children from urban areas. The latter tended to increase the State average (Table 11.10). The proportion of women teachers was also quite high.

The Tests in the State

Maharashtra contributed to the pool of items to begin with and also took part in the try-out of the test items. It thereby had the advantage of both influencing the final selection of the items and improving on their own translations. The distribution of the difficulty values of the items is given below.

Table 11.3

DIFFICULTY VALUES OF THE ITEMS

Pass Percentage	Arith	RC(P)	RC(S)	W.K	A.W	S.S.	Spell
10 - 19	4	3	1	-	2		1
20 - 29	10	4	2	1	3		2
30 - 39	11	5	5	2	4		9
40 - 49	6	16	4	21	8	2	4
50 - 59	6	10	3	14	6	2	4
60 - 69	1	6	-	2	1	10	5
70 - 79	2		1	-		4	
Median	35.0	45.7	39.5	47.6	43.2	64.5	40.7

The tests proved somewhat difficult in Maharashtra. Two-thirds of the items had pass percentages lower than 50%. The most difficult was the one in Arithmetic which should have changed the least in translation. The easiest was Sentence Structure—prepared by the State centre itself. The alternatives in this test could easily become too obviously incorrect. Or else, if children spoke at home the language for which this test was developed, they could identify grammatically correct formulation of a sentence more easily. Eighty-eight per cent children spoke Marathi at home. Their exposure to other media such as television was also high, 52% of the children reported watching television for some time. All this could improve this aspect of the learning of language.

The Groups in the Study

The Pupils

Data were received from 7,757⁷ pupils of Class IV, 54% as against 63% expected of these children were from

rural areas. The proportion of girls was 48%. 'Others' was the largest group in the State, comprising 55%, followed by 21% BC, 13% SC and 11% ST pupils. The average age of the pupils was 9.9 years.

A relatively small percentage (14.5) of fathers were illiterate; the percentage was higher only than for Kerala and Meghalaya. The comparable statistic for mothers was 36%. Another 28% fathers and 30.5% mothers had studied only up to the primary level. On the other extreme, 9% fathers and 3.4% mothers were graduates. Only 25% of the fathers were farmers; 9% were either professionals or had high salaried jobs. Seventeen per cent were unskilled workers and 5% were categorised under 'Others' which included the unemployed as well.

Twenty-three per cent children came from families which had only one or two children; 21% had three or more siblings. More than 55% children had attended pre-school. Eighty-eight per cent of the group in the sample reported their mother tongue to be Marathi.⁸

Very few children reported inadequate availability of textbooks (2.6%) or other study material (3.9%). The 81% reporting availability of most of the study material other than the textbooks was one of the highest percentages, lower only to Delhi. A place to study at home was reported by 17% but more than 50% received help with their studies from the family. Approximately 20% families required children to help with domestic work for two or more hours daily. They also facilitated children's attendance at school -- 80% attending school regularly was the highest in the country.

A newspaper and magazines were received by only 30% and 21% families, respectively; 35% homes were reported to have some books but more than 50% children said they read something other than their textbooks. Fifty-eight per cent children watched some television every day.

Relatively speaking, the children from Maharashtra seemed a privileged group. Their fathers were better educated, they came from small families. More than 50% had attended pre-school. A very large percentage could attend school regularly. Eighty-eight per cent of this group spoke the same language at home, which was their medium of instruction at school.

The Teachers

Seven hundred and fifty-three teachers from 361 schools responded to the Teacher Questionnaire, 61% were working in rural area; 54% were women.⁹ Fifty-one per cent were in the age group 35-50 years. Experience wise they

⁷ In some of the analyses, the data of one school with one pupil had to be dropped, 'N' for some of the analyses is 7756.

⁸ Only children learning through the medium of Marathi were tested in this study.

⁹ That more than 50% of the teachers were women was noted in Kerala, Maharashtra, Mizoram, Punjab and Delhi.

were divided quite evenly, 34% having worked for more than 20 years and 20% being new recruits with less than five years of service

Most of the primary school teachers (66%) in Maharashtra had studied only up to Class X, with 8% being not even matriculates. On the other hand, 14% were graduates. Seventy-six per cent had received two years of professional education addressed to preparing teachers for teaching young children, another 18.5% had received a comparable training programme for one year. A small percentage of 4% had the B.Ed. degree, and a negligible group of 1.6% were untrained. The headmasters reported 6.6% teachers to be untrained. Some in-service education was received by 71% of them.

A very large group comprising 92% of the respondents said that they frequently adopted new teaching practices. Nearly all of this group believed that such approaches improved both the interest and the learning of the pupil. Only 3% teachers said they seldom used any material other than textbooks. Fifty per cent teachers had prepared plenty of teaching material (audio-visual aids) themselves, only 2.4% had not made any effort in this direction. Eighty-five per cent teachers had involved even their pupils in this activity. Only 2% teachers evaluated pupils once a year, on the other hand, 55% said they administered monthly tests. But 45% used evaluation only for one purpose, probably promotion.

In Maharashtra, 93% teachers had copies of textbooks, either their own or from the library, only 7% borrowed it from the students (probably on the spot); 53% did not have access to the Marathi language dictionary.

More than 5% teachers reported asking parents of weak students to arrange private tuition instead of helping them themselves. Homework was checked regularly by 87% and 'sometimes' by another 13%. Five per cent teachers reported students rarely asking questions in the class.

The general education of the teachers in Maharashtra was not very high but they have had adequate professional education both pre-service and in-service. More of them adopted innovative practices. Basic teaching material such as textbooks was available to nearly all of them.

The Headmasters

Of the 311¹⁰ headmasters the data made available, by whom the questionnaire was answered, 4.5% were untrained and 14.5% had a B.Ed. degree, the rest had

received one or two years of professional education suitable for primary school teachers.

Headmasters in Maharashtra were mature with only 5.5% being less than 35 years of age. They were an experienced group, 87.5% had taught for more than 15 years, only 3.5% had a total teaching experience of less than five years. But 54% had been headmasters for less than five years.

The Schools

Forty-five per cent of the schools in the sample were from urban areas. Seventy-five per cent of all the schools were managed by the State government or local bodies. Of the rest, 22% were aided and 4.5% totally private. Only 47% were primary (only) schools; there were 44% middle and 8% secondary schools in this sample. Nine per cent schools admitted only girls and 3.5% only boys, the rest were co-educational. The percentage of newly opened schools (i.e., in the last ten years) was a moderate 7%, 81% had been in existence for more than 20 years. Thirty per cent of the schools had pre-primary sections as well -- a rather high percentage.

Facilities-wise, 60% schools had a room for the headmaster, 30% also had a common room for the teachers. Drinking-water was available in 79% of the schools and separate urinals for girls in 65% of them. Sixty-eight per cent schools had Book Banks and the average number of books in the library was 550.¹¹ Less than seven per cent teachers were untrained.

As in several other States, the practice of not detaining pupils in the beginning grades was not being followed by the schools uniformly. This could be partly because of a high percentage (26%) of private and middle/secondary (53%) schools. Twenty-one per cent schools reported non-existence of any such practice; in addition, 6% omitted to respond to this question. Thirty-two per cent did not detain children in Class I and another 36% promoted them up to Class III. A small 3% did not detain children beyond Class II. Fifty-three per cent schools had not been covered by Operation Blackboard. This is also the percentage of middle and secondary schools which did not need this help. Nearly 60% schools had a Parent Teacher Association and they held one or more meetings every year.

There was a large percentage of middle and secondary schools in the sample. The percentage of private and private aided schools was also high. General facilities in the schools were quite good when compared with other States.

¹⁰ Data from only 311 SQs was made use of due to some errors in punching.

¹¹ These statistics have to be seen in the light of the fact that 53% of the schools in the sample were middle/secondary schools.

Achievements of Pupils

The following statistics are based on the data available from 7756 pupils who responded to the tests.

Table 11.4
ACHIEVEMENTS OF PUPILS

<i>Test</i>	<i>Arith</i> (40) ¹²	<i>RC(P)</i> (44)	<i>RC(S)</i> (16)	<i>W K</i> (40)	<i>A W</i> (24)	<i>S S</i> (18)	<i>Spell</i> (25)	<i>Total</i> (207)
Mean	15.1	20.0	6.7	19.8	10.0	11.5	10.8	93.9
SD	7.9	9.6	3.9	9.7	4.7	5.0	6.2	
Mean as Percentage	37.7	45.4	41.9	49.5	41.7	63.9	43.2	45.4
KR-20	89	91	82	92	78	89	89	
All India Median as Percentage	41.2	45.4	43.1	49.5	41.7	57.8 ¹³	42.8 ¹³	45.2

The really high average was on the test on Structure of a Sentence. This and the test on Spelling were constructed by the State centre itself. The possibility of tests getting better adjusted to the levels of the pupils was high, the score on spelling was comparable to those on other tests. The other possibilities were easier alternatives in the test and the prevalent styles of speaking by the families in general.

The achievement in Arithmetic, which is more dependent on specific teaching in the school, was the lowest. The next low scores were on Reading Comprehension (sentences) and Appropriate Word, where it is suspected that the common format of the test item might have also contributed to it. The reliability coefficients for these two tests were also the lowest.

In all the States a small sample of pupils from Class V was also administered the same battery. The purpose

was to study the gain in achievement in a year's time.

Table 11.5
MEAN ACHIEVEMENT OF PUPILS — CLASSES IV AND V

<i>Class</i>	<i>Arith</i>	<i>RC(P)</i>	<i>RC(S)</i>	<i>W K</i>	<i>A W</i>	<i>S S</i>	<i>Spell</i>	<i>Total</i>
IV(7756)	15.1	20.0	6.7	19.8	10.0	11.5	10.8	93.9
V(244)	12.8	17.8	5.7	14.9	8.3	10.3	8.0	77.8

The results were very startling. The scores of children of Class V were consistently lower than those of children of Class IV in each of the seven tests. This cannot be considered accidental. If the data of pupils for Class IV was drawn from 347 schools, the children of Class V were also drawn from as many as 87 schools. It appears that the State added one or two children from Class V to the group of children of Class IV who were tested. Only in five schools, a group of 24 or 25 children of Class V had been administered the tests. There were 84 schools from which pupils of both the class groups were drawn. The mean scores of children from these schools were compared. For the test in arithmetic in 46 schools, the children from Class V had a lower mean than those of Class IV. In tests of language, the direction of the differences was divided evenly over Class V versus Class IV. The number of Class V children varied from one to three in each group, there is no reason to assume that the weaker children of Class V would be included in the larger group that was being tested. The reverse picture would be easier to accept.

For the sampling of schools, each State was divided into some regions.¹⁴ Table 11.6 provides the data on the average achievement of pupils in the different regions.

Table 11.6
ACHIEVEMENTS OF PUPILS — REGION-WISE

<i>Region</i>		<i>Arith.</i>	<i>RC(P)</i>	<i>RC(S)</i>	<i>W K</i>	<i>A. W</i>	<i>S S</i>	<i>Spell</i>	<i>Total</i>
Greater Bombay (1309)	Mean	17.1	24.0	7.9	22.9	12.1	13.9	13.3	111.2
	SD	7.4	8.6	3.6	9.3	4.3	4.1	5.2	
Inland Western Ahmednagar (1723)	Mean	16.3	21.9	7.5	21.8	10.9	12.5	12.5	103.4
	SD	8.2	9.4	3.9	9.5	4.9	4.6	5.9	
Inland Parbhani (1680)	Mean	14.6	18.9	5.6	18.6	9.7	10.9	10.1	88.4
	SD	7.2	8.8	3.6	9.2	4.3	4.8	6.0	
Inland East-Amravati (878)	Mean	10.6	14.5	5.5	17.0	7.7	8.6	8.5	72.4
	SD	7.6	9.8	3.7	10.7	4.7	5.6	6.4	
Eastern Bandra (978)	Mean	17.2	22.3	7.6	19.6	10.5	12.2	10.9	100.3
	SD	7.8	9.7	3.9	9.7	4.4	4.7	6.2	
Coastal Thane (1188)	Mean	13.3	16.7	5.9	17.7	8.2	10.1	8.3	80.2
	SD	7.0	8.2	3.8	8.6	3.9	4.9	5.8	

¹² The maximum possible score.

¹³ The tests were not the same in all the States; besides, Tripura and Nagaland are excluded.

¹⁴ In most States this type of division was available in terms of educational divisions, in others, administrative divisions were used.

The differences between the regions were quite large. The average score achieved by pupils in Greater Bombay was the highest, and it was 50% higher than the lowest average of Inland Eastern represented by Amravati. The other weak region was Coastal (Thane). It is known that the Bombay Municipal Corporation has been making a great effort to improve teaching -- learning in the primary schools. The achievements of pupils on two tests, namely, Arithmetic and Reading Comprehension (paragraphs) were also studied objective-wise, and in the case of arithmetic, topic-wise too.

Table 11.7

ACHIEVEMENT IN ARITHMETIC — OBJECTIVE-WISE

Objective	Mean	SD	Mean as Percentage
Knowledge (19)	7.3	3.8	38.4
Understanding (12)	5.0	2.9	41.7
Application (9)	2.8	2.0	31.1
Total (40)	15.1	7.9	37.7

Little or no difference between the mean scores on items categorised under Knowledge or Understanding had been noticed elsewhere as well. As the level of subject-matter was quite elementary, the differentiation between these two objectives might have been difficult to make. The percentage score on Application was relatively low.

Table 11.8

ACHIEVEMENT IN ARITHMETIC — TOPIC-WISE

Topic	Mean	SD	Mean as Percentage
Time (3)	1.4	1.1	46.7
Factors and Multiples (7)	2.1	1.6	30.0
Fundamental Operations (12)	4.7	2.8	39.2
Weights and Measures (3)	1.1	.9	36.7
Fractions (5)	1.3	1.2	26.0
Decimals (7)	3.1	1.7	44.3
Unitary Method and Others (3)	1.5	1.0	50.0
Total (40)	15.1	7.9	37.7

The highest percentage of scores were seen on Unitary Method, Time and Decimals. The last one was not considered an easy section. It is suspected that 'recency' could be playing some part in these averages being higher.¹⁵ Scores on the three items categorised under Unitary Method have been high in other States as well. The items were very straightforward and similar to the

ones given in books and practised in the classroom by simply applying rules (mechanically).

As compared to Decimals, the scores were very low on Fractions. A 39% score on Fundamental Operations, the basics which children start learning from Class II onwards, was disappointing.

Table 11.9

ACHIEVEMENT IN READING COMPREHENSION OBJECTIVE-WISE

Objective	Mean	SD	Mean as Percentage
Noting Detail (17)	8.8	4.2	51.8
Simple Comprehension ¹⁶ (13)	6.0	3.3	46.1
Inference ¹⁷ (14)	5.2	3.0	37.1
Total (44)	20.0	9.6	45.4

The percentage scores on the three objectives were in the expected direction; a lower percentage on Inference was expected.

The differences in the achievements of pupils, when divided over location, gender and caste, were also studied. The relevant details are presented in the following tables.

Table 11.10

DIFFERENCES IN ACHIEVEMENT — LOCATION-WISE

Test	Location	Mean	SD	t
Arith	U	16.1	8.1	11.04"
	R	14.2	7.5	
RC(P)	U	22.2	9.4	19.02'
	R	18.1	9.3	
RC(S)	U	7.4	3.8	14.27
	R	6.1	3.9	
W.K.	U	21.5	9.8	14.49"
	R	18.4	9.3	
A.W.	U	11.2	4.6	21.19"
	R	9.0	4.4	
S.S.	U	12.9	4.7	21.86"
	R	10.4	5.0	
Spelling	U	12.3	5.9	20.20'
	R	9.5	6.1	
RC (total)	U	29.6	12.2	19.26"
	R	24.5	12.0	
T (5 + 6 + 7)	U	36.4	13.2	24.69'
	R	29.0	13.0	

Urban - 3559 Rural - 4197

* $p < .01$

In Maharashtra, urban and rural groups differed significantly not only statistically but also in absolute val-

¹⁵ This fits in with the average achievement of Class V being lower than that of Class IV.

¹⁶ This includes

(a) deriving meaning of difficult words from the context, and

(b) relating things at a simple level.

¹⁷ This includes identifying the message or the central idea and the title of the passage.

ues, the aggregate means being 103.6 and 85.9, respectively. It was one of the few States where the differences were so pronounced. The composition of the population (pupils in primary schools), in general, was somewhat different in Maharashtra. According to the Fifth Survey (1986), 64% of pupils were from rural areas. In the sample in the study, only 54% formed the rural group. The difference could be due to changes in demographic distribution or a genuine bias in the sample. In the case of the latter, the State got some advantage in the total mean. Nevertheless the differences over the rural/urban divide were highly significant.

Table 11.11

DIFFERENCES IN ACHIEVEMENT—GENDER-WISE

Test	Gender	Mean	SD	t
Arith	B	15.5	7.7	5.05*
	G	14.6	8.0	
RC(P)	B	20.0	9.3	25
	G	20.0	9.9	
RC(S)	B	6.7	3.8	75
	G	6.7	4.0	
W K	B	20.3	9.6	4.79*
	G	19.3	9.8	
A W	B	10.0	4.7	.07
	G	10.0	4.7	
S S	B	11.3	5.0	3.85
	G	11.8	5.0	
Spelling	B	10.7	6.1	2.08*
	G	11.0	6.2	
RC (total)	B	26.7	12.0	43
	G	26.6	12.8	
T (5 + 6 + 7)	B	32.0	13.6	2.34
	G	32.8	13.6	

Boys - 4046 Girls - 3710

*p < .05, p < .01

In contrast, differences between achievements of boys and girls were almost negligible, with the former having an aggregate score of 94.5 as compared to the 93.3 of the latter.

Table 11.12

DIFFERENCES IN ACHIEVEMENT — CASTE-WISE

Test	Group	Mean	SD	F
Arith	SC	14.6	7.3	33.37*
	ST	13.5	6.9	
	BC	14.2	7.6	
	Others	15.8	8.2	
RC(P)	SC	19.3	9.0	29.90*
	ST	18.7	8.7	
	BC	18.7	9.5	
	Others	20.9	9.8	
R C.(S)	SC	6.4	3.8	9.81
	ST	6.6	3.7	
	BC	6.4	3.9	
	Others	6.9	4.0	

Test	Group	Mean	SD	F
W K	SC	18.5	9.8	28.60*
	ST	18.5	9.1	
	BC	18.9	9.5	
	Others	20.7	9.7	
A W	SC	9.8	4.5	33.00*
	ST	9.2	4.3	
	BC	9.4	4.7	
	Others	10.5	4.7	
S S	SC	11.2	5.0	35.09*
	ST	10.7	4.8	
	BC	10.9	5.2	
	Others	12.1	4.9	
Spelling	SC	19.0	6.2	54.85*
	ST	9.6	6.1	
	BC	9.8	5.9	
	Others	11.6	6.1	
RC(total)	SC	25.7	11.6	26.60**
	ST	25.3	11.2	
	BC	25.1	12.1	
	Others	27.8	12.8	
T (5 + 6 + 7)	SC	31.0	13.4	55.95**
	ST	29.5	13.0	
	BC	30.1	13.3	
	Others	34.1	13.7	

SC - 1000 ST - 826 BC - 1651 Others - 4279

* p < .01

The situation changed again for the division over caste groups. 'Others' formed a significant 55% of the sample, followed by BC (21%), SC (13%) and ST (11%). 'Others' also achieved significantly higher — an aggregate of 98.4 — followed by SC (89.9), BC (88.3) and ST (86.8). The latter three groups were not so different from each other.

Factors Related to Pupil Achievement

Regression analysis was carried out against two criteria, namely, scores in Reading Comprehension and Arithmetic, separately. Before the analysis, data on groups of variables were combined to obtain three composite scores on 'Home Background', 'Facilities for Learning' and 'Educational Environment at Home'.

The regression coefficients for the variable entered for the three composite scores are given below:

Home Background

	RC	Arith
Location	-3.05**	-.60*
Father's Occupation	-.12	-.30*
Caste	.17	.21*
Father's Education	.77*	.45**
Mother's Education	1.75**	1.10*
Number of Siblings	-1.63*	-1.12**
R	.35	.33

* p < .05, ** p < .01

Except for 'Father's Occupation' and 'Caste' all other variables had significant regression coefficients for both the criterion variables. The two mentioned earlier seemed to make some contribution to differences in achievement in Arithmetic but not a significant one to Reading Comprehension. By and large, 'Home Background', as defined by a combination of this set of variables, had a significant and substantial correlation with achievement.

Facilities for Learning

	<i>RC</i>	<i>Arith</i>
Attended Pre-school	3.64	2.18
Place for Study	2.17	.89
Help in Homework	2.07	.76
Availability of Textbooks	2.94	1.48
Availability of Study Material	.95	.62
Helping Household	1.33	.54
Regularity in Attendance	1.60	1.28
<i>R</i>	.30	.25

$p < .01$

As in case of 'Home Background', all the variables had statistically significant regression coefficients, increasing the value of *R*.

Educational Environment at Home

	<i>RC</i>	<i>Arith</i>
Get Newspaper	3.11	1.57
Get Magazines	3.00	1.47
Books at Home	1.77	1.30
Reads Books	3.26	1.48
<i>R</i>	.37	.31

$p < .01$

Maharashtra was the only State where variables related to homebackground turned out to be so significant. It may be recalled that the percentage of illiterate parents (fathers — 14.5, mothers — 36%) was quite low compared to the situation prevailing in most other States. The percentage of illiterate fathers was lower than this only in Meghalaya and Kerala¹⁸. It is likely that with more money available, differences in these variables were managed to the advantage of children.

The three composite variables, along with five others, were regressed with achievement in Reading Com-

prehension and Arithmetic, separately. The step-wise increment in R^2 is shown in the tables below.

Table 11.13(a)
CONTRIBUTION OF PUPIL-RELATED VARIABLES
TO ACHIEVEMENT IN READING COMPREHENSION

<i>Variable</i>	<i>R</i>	<i>R</i> ²	<i>Increment in R</i> ²	<i>F</i>	<i>p</i>
Word Knowledge	.5731	.3285	.3285	3793.20	.57
Educational Environment	.6071	.3686	.0401	193.13	.37
Facilities for Learning	.6123	.3749	.0062	77.57	.30
Home Background	.6142	.3773	.0024	29.77	.36
Similar Language	.6144	.3775	.0002	2.41	.06
Gender	.6145	.3776	.0001	1.76	>.01
Time Watch TV	.6146	.3777	.0001	1.20	.19
Age	.6146	.3777	.0000	-	>.15

$p < .01$

Table 11.13(b)
CONTRIBUTION OF PUPIL-RELATED VARIABLES
TO ACHIEVEMENT IN ARITHMETIC

<i>Variable</i>	<i>R</i>	<i>R</i> ²	<i>Increment in R</i> ²	<i>F</i>	<i>p</i>
Word Knowledge	.5466	.2988	.2988	3403.79	.55
Educational Environment	.5654	.3197	.0210	238.79	.31
Home Background	.5696	.3244	.0046	53.16	.31
Time Watch TV	.5710	.3260	.0016	18.72	.13
Gender	.5723	.3275	.0015	17.28	>.06
Facilities for Learning	.5737	.3291	.0016	18.40	.25
Age	.5738	.3292	.0001	1.58	>.15
Similar Language	.5738	.3293	.0000	-	.06

$p < .01$

In addition to Word Knowledge which was taken as a surrogate for differences in pupil ability, all the three home background variables made significant contributions to R^2 . Considering that developed ability as measured by Word Knowledge would also have been influenced by some of the home background variables, the additional contribution clearly points to the same with school-related learning. 'Time Watch TV' and 'Gender' made a significant contribution to R^2 with respect to

¹⁸ The union territory of Delhi was not considered here.

Arithmetic The relationship between watching TV and scores on arithmetic has been noticed in some other States as well. The economic status of the family could be an underlying variable. The home language being different did not seem to make much difference to achievement. This has to be seen in the light of the fact that some of these children may belong to migrant families who might really be bilingual, using one language at home and another (Marathi) in the world outside the home with equal facility. The values of *t*'s were similar for Reading Comprehension and Arithmetic, only systematically smaller for the latter, so was R^2 .

The impact of home background-related variables was presented in Tables 11.13 (a) and 11.13 (b). In Maharashtra, the percentage of total variance in the scores of the pupils in Reading Comprehension and Arithmetic that could be explained as due to differences on some of the variables mentioned earlier was quite high, being 38% and 33%, respectively. The median values for all the States were 27% and 18% only. It still left a large percentage of variability in the scores achieved by pupils unexplained.

Data were also collected on several variables related to the policies and practices followed by schools. If the schools differed from each other on some or several of these, the achievements of pupils could also differ for these very reasons. Differences between school means were nearly as large as those between the scores of the pupils. The standard deviation of mean achievement in arithmetic of 286 schools in Maharashtra was 6.4, and that obtained from the distribution of the scores of 7,756 pupils was 7.9. All the school-related variables, excluding those providing information about qualifications and experience of the teachers and practices they adopted to help their pupils to learn were, regressed with the achievement of pupils on the two criterion variables.

Table 11.14 (a)

CONTRIBUTION OF SCHOOL-RELATED VARIABLES
TO ACHIEVEMENT IN READING COMPREHENSION

Variable	<i>R</i>	R^2	Increment in R^2	<i>t</i>	<i>r</i>
Total Enrolment	.3415	.1166	.1166	37.49*	.34
Percentage Attendance	.4068	.1655	.0489	16.59**	.24
Financial Freedom	.4402	.1938	.0282	9.88*	.24
Age of the Pupil	.4595	.2112	.0174	6.21*	-.28
Facilities for Teachers	.4735	.2242	.0130	4.69	.23
Boys/Girls/Co-ed	.4824	.2327	.0085	3.09	-.04
Teachers Untrained	.4890	.2391	.0064	2.36	-.11

$p < .05$; $p < .01$

Table 11.14(b)

CONTRIBUTION OF SCHOOL-RELATED VARIABLES
TO ACHIEVEMENT IN ARITHMETIC

Variable	<i>R</i>	R^2	Increment in R^2	<i>t</i>	<i>r</i>
Total Enrolment	.2864	.0820	.0820	25.37	.29
Percentage Attendance	.3630	.1317	.0497	16.21*	.24
Financial Freedom	.3959	.1567	.0250	8.35	.21
Proportion SC/ST	.4184	.1751	.0184	6.25	-.22
Age of the Pupil	.4339	.1882	.0132	4.54	-.26
No Detention Policy	.4455	.1985	.0102	3.57	-.00
Classes in School	.4553	.2073	.0088	3.10	.12
Incentive Schemes	.4628	.2142	.0069	2.43	-.03

$p < .05$; $p < .01$

In the two tables given above, the variables where the *F*-value regarding statistical significance of the increment in R^2 was less than 2.00 have been omitted. But several of the variables added small contributions to R^2 s, increasing the cumulative values well beyond what are given in these tables. The total R^2 in this case were 30% and 24% for Reading Comprehension and Arithmetic, respectively. The former was higher than the median for all States, but not the latter.

In Maharashtra, consistency in significant contribution of several independent variables to R^2 s related to the two criteria was noticed. 'Total Enrolment' in Classes I to IV, 'Percentage Attendance', 'Financial Freedom' to the headmasters and 'Age of the Pupil' made a difference to the mean achievement of the schools. The first three had positive *r*'s with both criterion variables, and the last one negative but not low values.

While 'Percentage Attendance' and the degree of 'Financial Freedom' to the headmaster were expected to be correlated positively, the 'Total Enrolment' resulting in number of pupils in a class is generally suspected by the teachers and parents to have an adverse affect on pupil achievement. The positive sign of the correlation had been noticed in some other studies as well. In this study, the two *r*'s were also the numerically largest in their respective groups. It is likely that behind the stated variable of number of pupils in a class, 'there were others' such as the demand (and pressure) for admissions in schools known to produce good results.

The discretionary money available to the headmasters of schools governed by the government, including local bodies, would generally be the same for all schools. In the sample, 25% of the schools were private aided or private. The headmasters in these schools could have varying amounts of freedom. Forty-four per cent of the schools were middle schools and 8% were secondary schools. The three types of schools would differ in the availability of discretionary money available to the headmasters. Moreover, in the rich State of Maharashtra, some

headmasters may be able to raise funds from the local community to meet specific pressing needs

'Age of the Pupil' had negative (but substantial) correlations with both Reading Comprehension and Arithmetic. It may be recalled that there was high variability in responses on the practice of 'No Detention' being followed by the schools. It could result in some schools having a larger number of young but non-achieving pupils in the class compared to those schools who would detain such pupils. In the case of the latter, the average

age of the pupils may rise faster than their achievement, giving rise to a negative correlation. Availability of facilities for teachers made a positive contribution to learning in language but not in arithmetic. If the proportion of SC/ST pupils was high in a school, its average in Arithmetic tended to be lower. The learning of arithmetic was considered more school-specific and was expected to be somewhat independent of home-related variables, but aspiration and expectation of further education could affect the achievement of SC/ST groups adversely.

Table 11-A

INTER CORRELATIONS OF PUPIL-RELATED VARIABLES AND ACHIEVEMENT

[illegible]

Table 11-B

INTER CORRELATIONS OF SCHOOL-RELATED VARIABLES AND ACHIEVEMENT

1	100	-09	-12	-07	03	-11	06	15	02	07	06	-13	-06	-20	-02	-02	-17	-04	-13	-12	06	-04	-06	-01	11	-01	-03	03	06	11	09	12	09	09	.08	12	09	12	39
2	100	48	07	-04	-10	-11	01	-12	22	04	10	02	09	-09	01	02	17	08	01	08	12	-11	09	-07	01	10	08	-09	00	.09	03	03	08	09	13	11	08	05	
3	100	12	-07	-07	-03	02	-10	27	05	11	-09	06	-09	-01	-05	17	12	01	09	00	03	.12	-08	-00	12	07	-02	-00	08	03	03	08	09	10	06	09	04		
4	100	-09	18	-03	12	02	11	03	14	-02	-17	02	01	-02	07	06	07	04	-10	17	-01	.06	10	-02	06	-03	-08	-08	07	06	07	14	11	08	11	06			
5	100	-52	11	-18	16	17	01	-49	16	12	05	-12	-01	-24	-31	-55	-41	23	-21	17	-29	-05	10	07	00	38	36	-13	-22	-25	-24	-29	-31	-25	-24				
6	100	13	36	-14	-15	-04	54	-14	-34	03	06	-03	24	38	48	35	-31	27	-21	.40	12	-10	-05	01	-33	-38	20	29	28	35	28	35	32	30					
7	100	10	03	-07	00	08	-06	03	-04	-03	06	05	10	04	11	-09	10	-02	11	07	-05	-05	04	-07	03	02	-02	-09	.03	-06	-02	01	-04						
8	100	-05	07	12	30	-16	-25	-04	09	11	04	14	18	08	-17	04	-13	17	22	04	.03	00	-02	-12	15	13	13	18	12	20	20	13							
9	100	-12	-08	-03	-03	-08	-02	-05	-04	-23	-06	-19	-19	-06	01	-04	-11	15	-04	-05	02	08	.19	.12	08	05	06	04	08	08									
10	100	03	-01	03	-08	-04	01	03	07	-10	08	12	-08	02	03	-13	.13	07	.03	13	14	-03	-04	-04	-03	-02	-05	-06	-04										
11	100	-00	-07	-06	-05	02	03	02	12	05	02	01	03	02	07	16	08	07	-05	09	08	03	04	01	-02	08	01	02	03										
12	100	-20	-24	-09	08	01	37	22	36	40	-20	16	-24	33	05	02	.02	-03	-26	-24	29	33	33	40	36	-41	38	34											
13	100	19	12	-07	03	11	-06	-10	-11	-01	-17	19	-16	-08	01	-03	-02	-01	10	-22	-19	-11	-20	-18	-20	-20	-17												
14	100	-02	-03	-02	-04	-15	-10	-11	14	-24	17	-21	-22	02	01	02	05	06	-26	-27	-27	-35	-28	-32	-32	-28													
15	100	-04	-07	02	-03	-03	-09	06	00	-05	-03	-01	04	07	02	07	-11	-09	-11	-08	-08	-12	-12	-05	-11														
16	100	54	01	-06	07	13	03	03	-15	11	05	-04	-02	-09	04	-06	09	08	08	12	14	14	11	08															
17	100	01	-03	-01	-02	-05	01	-02	-04	-04	-01	-01	-10	09	02	11	01	01	07	09	11	08	01																
18	100	17	23	21	-10	11	-09	23	03	01	-02	-04	-24	-05	12	23	18	25	24	.26	21	23																	
19	100	40	22	-14	11	-09	23	03	01	-02	-04	-24	-05	12	23	18	25	24	.26	21	23																		
20	100	37	-14	07	-12	-20	08	-11	-06	03	-26	-21	15	22	24	24	28	26	20	23																			
21	100	-15	00	-09	26	06	-08	-09	-03	-20	-13	16	20	19	20	24	26	21	20																				
22	100	-17	08	-08	-12	11	13	-00	19	16	-10	-13	-11	-16	-11	-16	-17	-13																					
23	100	-16	08	04	01	01	02	-12	-18	-00	05	02	10	05	10	11	04																						
24	100	-15	-03	08	08	-07	13	16	-03	-12	-08	-12	-08	-14	-09	-12																							
25	100	-11	-03	-03	01	-20	-14	21	24	22	28	23	26	27	24																								
26	100	07	08	-04	-01	04	24	23	24	29	31	26	26	24																									
27	100	87	-07	09	19	02	04	09	-03	07	01	-03	06																										
28	100	-10	11	12	-00	-01	03	-03	06	-01	-03	00																											
29	100	00	14	00	05	01	-03	-01	01	-01	04																												
30	100	32	-04	-12	-13	-11	-14	-14	-11	-13																													
31	100	-07	-10	-14	-15	-11	-10	-13	-11																														
32	100	83	-2	72	71	74	83																																
33	100	81	74	-5	75	72	99																																
34	100	72	78	71	71	90																																	
35	100	76	79	84	76																																		
36	100	78	73	79																																			
37	100	86	77																																				
38	100	74																																					
39	100																																						

Meghalaya

A sample of 1500 pupils of Class IV was expected from Meghalaya but the State returned data for only 511 students. The planned sample was to be obtained from 186 schools. In all, 135 schools were visited but, for reasons not clear, the number of pupils from most schools was four only.¹ It is likely that the State misunderstood the maximum number of pupils who were to be administered tests in any particular school to be four instead of 25. It may be mentioned that the average enrolment in Class IV in rural areas was only seven in the 1986 survey, however, it was shown as 31 in the urban areas. In this sample, only 16 pupils from four schools in Shillong were administered the tests.

Table 12.2

SAMPLES PLANNED AND ENTERED IN ANALYSES

Region	No. of Schools		No. of Pupils	
Capital City	5 ²	4 ³	125	16
Rest of the State	181	131	1393	495
Total	186	135	1518	511

The State did a hurried job of final administration of tests to beat the (even relaxed) deadline. The total pupil sample got reduced to 34% of that planned, but it came from 72% of the schools selected. The planned distribution of pupils between the capital city and the rest of the State was also disturbed. The representativeness of the children from the capital city got reduced from 8% to 3% only, which affected the State average adversely.

To judge the representativeness of the sample with respect to the population, several indices obtained from

the data were compared with the corresponding statistics as reported in the Fifth All India Educational Survey conducted by the NCERT in 1986.

Table 12.2

SAMPLE AS COMPARED TO THE POPULATION

Variable	Percentage	
	1986 Survey	Sample in the Study
Primary (only) Schools	96.6	48.6 ⁴
Girl Students	49.7	42.1 ⁵
Scheduled Caste Students	1.1	7.2 ⁶
Scheduled Tribe Students	91.1	91.2 ⁷
Women Teachers	40.0	32.1 ⁶
Trained Teachers	50.0	60.7 ⁷

The maximum deviation was observed in the proportion of schools which had Classes I to V only. The percentage was a high 96.6% in 1986, it was less than 50% in the present study. Either the State administered the tests in a larger number of middle schools or many primary schools were raised to the middle level in the last 5-6 years, there were no secondary schools in the sample. As the State did not administer tests in all the selected schools, more primary schools could have got dropped because of difficult accessibility.

The smaller proportion of girl students could be due to the difference in enrolment and attendance. The percentage of women teachers was also less than the 40% noted in 1986. This is perplexing unless both the enrolment of girls and women teachers were related to the status of school, i.e., primary or middle.

The position of trained teachers improved in the expected direction, as did the percentage of SC pupils attending school.

1 The State Coordinator explained: "The tests were conducted during the winter vacation, as such, the target could not be reached. In fact, we had to make a special request to the heads of the institutions to collect the students." The representativeness of the sample thus becomes doubtful.

2 The number planned.

3 The number obtained.

Source

4 The School Questionnaire.

5 The Pupil Questionnaire.

6 The Teacher Questionnaire.

7 The State Coordinator later informed: "The tests were administered to schools having Classes III to VI. This being a totally different division, the headmasters could have got confused about the category to which their school belonged to. The classification said classes (1) I - IV, (2) V/VI/VII/VIII."

The final sample in Meghalaya worked out to be different from what was planned, only 72% of the schools were reached and the proportion of middle schools was very high. It was difficult to estimate how it had affected the State averages.

The Tests in the Study

Meghalaya did not participate in the try-out of the test items. It translated tests into the two languages that are used as the medium of instruction at the primary level. However, data for the two language groups were merged.

Table 12.3

DIFFICULTY VALUES OF ITEMS

Pass Percentage	Arith	RC(P)	RC(S)	W K	A W	S S	Spell
0 - 9	1			-	-		-
10 - 19	3	5	1	-	1	-	
20 - 29	2	5	2	2	6		3
30 - 39	4	7	-	5	3		4
40 - 49	6	8	2	19	5		5
50 - 59	13	2	3	10	7	3	2
60 - 69	8	10	4	2	2	1	6
70 - 79	3	5	3	2	-	5	2
80 - 89	-	2	1	-	-	-	2
90 - 99	-	-	-	-	-	9	1
Median	52.6	45.7	59.5	46.2	43.5	84.5	52.0

With the exception of one test on Sentence Structure, the difficulty level of the other tests seemed suitable for the pupils in Meghalaya. The tests on Sentence Structure and Spelling were to be constructed by the SCERT, Shillong, themselves. Once again, due to some misunderstanding, the State tried to translate the Sentence Structure test from Hindi into their own languages. This exercise seems to have resulted in a very poor test.

The Groups in the Study

The Pupils

As mentioned earlier Meghalaya returned data for 511 pupils only; 92% of the pupils were from rural areas; 42% were girls. The average age of these children was 10.5 years. As would be expected, most children (91%) were from Scheduled Tribes, 7% were Scheduled Castes. The number of children belonging to the other two groups

was negligible. Only 11% children came from large families having four or more children; 21% families had only one or two children.

The percentage of illiterate fathers was a negligible 2%,⁸ lower than that of even Kerala, illiterate mothers were 21.5%. Eighty-eight per cent fathers had studied beyond primary school, but the graduates were less than 2%. The comparable figures for mothers were 55% and less than 1%. Forty-six per cent fathers were farmers and 34% were in some kind of business. The percentage of unskilled or unemployed persons was a low of 6%, next only to West Bengal.

More than 50% children had attended some pre-school programme, and only 17% said they spoke some language other than their medium of instruction at school. Availability of most of the textbooks was reported by 51%; other study material in adequate quantity was available to only 22% of the children — this percentage was lowest among the percentages reported by the children of 22 States. In contrast to a high percentage of literate fathers, help with homework was reported by only 38% of the sample. Twenty-five per cent children said they had some place for study at home. Forty-three per cent children had to help their families for two or more hours every day, and nearly half the children had to miss school sometimes or often.

Compared to other States, not many homes received a newspaper (11% only), magazines were received by twice as many homes. The percentage of homes which had no books apart from textbooks was the highest — 93% — in the country, and a comparable percentage of children said they did not read anything except their textbooks.⁹ A large majority (92%) of children did not have television sets in their homes.

The Teachers

Seventy-eight teachers responded to the Teacher Questionnaire; only 38.5% were working in the rural areas, 32% were women. As a group, they were a young lot, with 60% being less than 35 years of age. Corresponding to their age, 46% had taught for less than five years, only 29% had taught for more than 11 years.

The percentage of non-matriculates was the highest (45%) in the country, 9% were graduates. Compared to their being non-matriculates, the untrained teachers were not that many, only 19% teachers marked the 'Any Other' option under training which could include 'Untrained' teachers. The headmasters reported 39.3% teachers in

⁸ According to the Census figures of 1991, more than 40% of the population of age 7 and above was illiterate. Two per cent illiterate fathers could result from a sample of children from select schools. Alternatively, the illiterate population is totally stuck and does not send their children to school.

⁹ Enough reading material may not be available in the local languages.

their schools to be untrained.¹⁰ Sixty-five per cent teachers said they had received some in-service education.

Approximately 58% teachers lived sufficiently close to their place of work to require less than an hour to travel to and from their schools, but the number requiring two or more hours every day was the highest (28%) in the country.

In spite of their handicaps, 24% teachers said they adopted some innovative practices in their teaching, but compared to other States more teachers believed that such effort on the part of the teachers was not likely to improve either the interest or the achievements of the pupils. Although more than half the teachers said they had prepared plenty of audio-visual material themselves, frequent use of such material was reported by only 38% of the teachers, 31% said they rarely used any.

More than one third of the teachers evaluated pupil progress only once a year, 27% said they administered monthly tests. The rest followed the more traditional pattern of 2-3 evaluations a year. Regarding use of the evaluation for various purposes, 22% did not respond to the question, another 4% said more frankly that they used it for promotion only; the rest reported multiple use of the feedback thus available. Regular checking of homework was mentioned by only 46% of the teachers, with 23% saying they rarely did so. Again, the latter percentage was the highest in the country. Sixty-eight per cent teachers helped weak students by paying them special attention in the class, a very large number — 32% (the highest in the country) — asked the parents of such pupils to arrange private tuition. The percentage of pupils who asked questions in class was 37%, the smallest in the country.

Nearly 60% teachers had their own copies of the textbooks, some had them from the library; and only 12% borrowed them from the students. Eighty-five per cent had access to the language dictionary.

As a group, the teachers in Meghalaya could not be considered sufficiently well educated, nor did they appear to be involved with their work. Compared to the other States, they checked homework or evaluated pupil progress less frequently and depended more on the families to look after the learning by the pupils.

The Headmaster

Of the 72 headmasters that responded to the School Questionnaire, 82% were untrained; and of the rest, 14% had only one year of professional education meant for

preparing teachers for primary schools. As in the case of teachers, the headmasters were also very young, with 81% reporting their age to be less than 35 years. Corresponding to their age their total teaching experience was also limited. Only 7% had taught for more than 15 years. Seventeen per cent had been headmasters for less than five years.

The Schools

Only 4% of the schools in the sample were from urban areas. The sample of schools was nearly evenly divided over primary and middle schools. A very unusual feature of the schools in the State was that 85% of them were private aided. Ten per cent were managed by local bodies and only 4% were run by the government. Boys and girls studied together in 54% of the schools while 33% were only for girls. Pre-primary classes were attached to 83% of the schools, it may be recalled that more than 50% of pupils had attended pre-school classes. In line with a large proportion of teachers having been in service for a short period of time, 86% of the schools had come into existence in the last ten years only.

With regard to physical facilities, nearly half the schools had a room for the headmaster but only 11% had a common room for the teachers. Drinking water was available in merely 18% of the schools but urinals for girls existed in 72%. Almost half the schools had Book Banks, Headmasters reported 'No Books' in the library.

Sixty-nine per cent schools reported that they did not detain children up to Class III; 24% promoted them up to Class IV regardless of their achievements. Less than 6% schools had benefited from Operation Blackboard, and that too during last one year only.¹¹ With the exception of 3%, the schools did not have PTAs.

The schools in Meghalaya were somewhat different from those in the rest of the country. Most of them were private aided, several admitted either boys or girls only. A large number had been started somewhat recently. A PTA was rare.

Achievements of Pupils

It has already been mentioned that the State produced tests in two languages, Khasi and Garo and administered them to the children studying through these mediums. The data of these two language groups were pooled for all analyses. The achievements of 511 children of Class IV are analysed in Table 12.4.

10 The State Coordinator informed: "In Meghalaya we do not have pre-service training as such. Teachers recruited are not trained and, also, the in-service intake capacity is very low."

11 This should be seen in the light of the fact that nearly half the schools were middle schools and a very large percentage were private aided.

Table 12.4

ACHIEVEMENTS OF CHILDREN

Test	Arith (40)	RC(P) (44)	RC(S) (16)	W K (40)	A W (24)	S S (18)	Spell (25)	Total (207)
Mean	19.7	21.1	8.8	19.2	10.0	14.5	13.6	106.9
SD	9.2	8.4	3.4	7.0	5.1	4.1	6.1	
Mean as Percentage	49.2	47.9	55.0	48.0	41.7	80.5	54.4	51.6
KR-20	0.92	0.89	0.75	0.82	0.83	0.90	0.90	
All India Median as Percentage	41.2	15.4	43.1	49.5	41.7	57.8 ¹²	42.8	45.2

The average achievement of pupils over the tests varied between 42% and 55%, with the exception of 80.5% on the test of Sentence Structure. This test, along with the one on Spelling, was prepared by the State centres in a language other than Hindi. The difficulty level thus could vary more easily. If the alternatives to the correct answer were obviously incorrect, a large number of pupils would get the answers right. A very easy test got the State some advantage in the aggregate. Without this test, the percentage total score would work out to 48.9 instead of 51.6. The test on spellings, though slightly easier, did not look so very different.

The mean score of 49.2% on Arithmetic when compared with other States was considered satisfactory. A low score was observed only on the choice of an Appropriate Word in writing.

The reliability coefficients were satisfactory.

All States were requested to administer the test battery to a small sample of pupils of Class V. The purpose was to study the improvement in achievement in one year. A sample of 200 students to be selected from at least 10 schools was recommended. Meghalaya tested only 33 pupils of Class V, but those were from 30 schools. As was pointed out earlier, the number of pupils tested in each school was very low.

Table 12.5

MEAN ACHIEVEMENTS OF PUPILS — CLASSES IV AND V

Class	Arith ¹	RC(P)	RC(S)	W K	A W	S S	Spell	Total
IV (511)	19.7	21.1	8.8	19.2	10.0	14.5	13.6	106.9
V (33)	18.2	17.8	8.3	19.0	8.0	15.0	12.3	98.6

Not only was the aggregate score of pupils of Class V lower, the achievements were lower on each of the tests with the exception of Sentence Structure on which it was higher by .5. It was difficult to understand the situation. The 'recency' factor could play some role in a

test of arithmetic but it made no sense in Reading Comprehension or in Appropriate Word where there was nothing specific to the textbooks.

At the stage of sampling, the States were divided into educational regions. Wherever educational divisions were not available, administrative regions were used and a proportionate sample of schools was selected from each region. The sample was actually selected from one (or two) district(s) selected randomly from the region from the list provided by the State. The capital city of each State was included in the sample. The sample from Meghalaya was divided only under 'Capital City' and 'the Rest of the State'.

Table 12.6

ACHIEVEMENTS OF PUPILS — REGION-WISE

Region	Arith	RC(P)	RC(S)	W K	A W	S S	Spell	Total
Capital Mean	31.1	27.9	9.9	25.1	15.6	11.4	22.1	143.1
City SD	3.1	6.9	2.5	7.2	2.0	1.9	2.6	
(16)								
Rest of Mean	19.3	20.9	8.8	19.0	9.9	14.6	13.4	105.9
the State SD	9.1	8.3	3.4	6.9	5.1	4.1	6.0	
(495)								

The difference in the total score was very high, as it was on the tests in arithmetic and spellings because the skills learnt more specifically in the school rather than picked up from the environment. The direction of the difference was reversed in the test on Sentence Structure. Could it be that the children in the big city, where several languages would be used by different groups, get mixed up on what is the correct construction of a sentence? If the basic grammar (in this respect) of the languages spoken by large groups were different, it could affect the children in the big cities adversely.

The sample from Shillong, the capital city, though selected from four schools, was too small to repose sufficient faith in the data.

The achievements of pupils on two of the tests, namely, Arithmetic and Reading Comprehension (Para), were also studied objective-wise, and in the case of arithmetic, topic-wise also.

Table 12.7

• ACHIEVEMENT IN ARITHMETIC — OBJECTIVE-WISE

Objective	Mean	SD	Mean as Percentage
Knowledge (19) ¹³	9.4	4.7	49.5
Understanding (12)	6.3	2.9	52.5
Application (9)	4.0	2.3	44.4
Total (40)	19.7	9.2	49.2

¹² Tripura is excluded. The content of these two tests was not common in all States.

¹³ The maximum possible score.

A lower percentage on items on Knowledge as compared to Understanding was not understood. The two were equal in many States, suggesting little difference in the items at this elementary level, but in Meghalaya it was even lower. A lower percentage on Application was in the expected direction.

Table 12.8

ACHIEVEMENT IN ARITHMETIC — TOPIC-WISE

Topic	Mean	SD	Mean as Percentage
Time (3)	1.7	1.1	56.7
Factors and Multiples (7)	3.3	2.0	47.1
Fundamental Operations (12)	6.0	3.1	50.0
Weights and Measures (3)	1.4	.8	46.7
Fractions (5)	2.7	1.4	54.0
Decimals (7)	2.8	1.4	40.0
Unitary Method and Others (3)	1.7	1.1	56.7
Total (40)	19.7	9.2	49.2

The highest percentage scores on Topics 1 and 7 had been observed in several States, this could be due to the items included being easier or to 'recency' in the introduction of these topics. The questions on Unitary Method were very similar to the ones usually given in the books and practiced in the classroom. A fifty per cent score on Fundamental Operations, though considered low in itself, was not so in comparison with other States. Except on Decimals, the pupils did fairly well on all topics.

Table 12.9ACHIEVEMENTS IN READING COMPREHENSION (PARA)
OBJECTIVE-WISE

Objective	Mean	SD	Mean as Percentage
Noting Detail (17)	9.5	4.8	55.9
Simple Comprehension ¹⁴ (13)	6.5	3.0	50.0
Inference ¹⁵ (14)	5.1	2.4	36.4
Total (44)	21.1	8.4	47.9

The average percentage on the three objectives were in the expected direction, but compared to other States the mean achievement on 'Inference' was lower.

¹⁴ This includes

(a) deriving meaning of difficult words from the context, and
(b) relating things at a simple level

¹⁵ This includes identifying the message or the central idea or the title of the write-up

Differences on the mean achievement of pupils, when divided over location, gender or caste, were also studied, the data have been summarised in Tables 12.10 to 12.12.

Table 12.10

DIFFERENCES IN ACHIEVEMENT — LOCATION-WISE

Test	Location	Mean	SD	t
Arith	U	21.7	10.4	1.48
	R	19.5	9.1	
RC(P)	U	24.9	8.9	3.00
	R	20.8	8.2	
RC(S)	U	9.6	2.5	1.59
	R	8.8	3.4	
W.K.	U	19.5	7.5	.29
	R	19.1	7.0	
A.W.	U	12.9	4.6	3.74
	R	9.8	5.1	
S.S.	U	13.8	3.3	1.08
	R	14.6	4.1	
Spelling	U	18.3	5.4	5.12
	R	13.2	6.0	
RC (total)	U	34.5	10.7	2.75
	R	29.6	11.0	
T(5 + 6 + 7)	U	45.0	8.4	5.56
	R	37.6	8.1	

Urban - 40 Rural - 471

p < 0.1

Urban children apparently scored more than the rural children in all the seven tests, and three of these differences were statistically significant. It may be recalled that the 16 pupils from Shillong had much higher means than the children from the rest of the State. In reality, it was the same differences reappearing in a somewhat diluted form. The shifting of data of 24 pupils from the 'Rest of the State' diluted the mean scores of pupils from Shillong, reducing the same from 143.1 to 120.7 in the aggregate. It made no difference to the mean scores as obtained for the rural group (105.8) as compared to the sample from the 'Rest of the State' (105.9). What got transferred as the urban group was truly a random sample from the State minus the capital.

It would not be right to conclude that urban children, in general, did better than the rural children.

Table 12.11

DIFFERENCES IN ACHIEVEMENT — GENDER-WISE

Test	Gender	Mean	SD	t
Arith.	B	18.4	8.9	1.70
	G	21.4	9.3	
RC(P)	B	20.6	8.2	1.64
	G	21.8	8.5	
RC(S)	B	8.7	3.2	0.71
	G	9.0	3.6	
W.K.	B	18.8	6.8	1.59
	G	19.7	7.2	
A.W.	B	9.7	5.1	.82
	G	10.5	5.1	
S.S.	B	14.8	4.0	1.90
	G	14.1	4.1	
Spelling	B	13.3	6.1	1.54
	G	14.1	6.1	
RC (total)	B	29.3	10.8	1.47
	G	30.8	11.4	
T	B	37.8	8.4	1.28
(5 + 6 + 7)	G	38.8	8.4	

Boys - 296 Girls - 215

p < .05, * p < .01

Girls did better than the boys in six out of seven tests, but only one of these differences was statistically significant. Because of persistence in direction, the aggregates added upto 110.6 for girls as compared to 104.3 for boys. The girls were 42% of the sample as compared to near 50% expected according to enrolment. They could thus have become a somewhat select group when compared to the boys. Also, when social discrimination is minimum—as was suggested by the near 50% enrolment - girls as a group tend to score high in the examinations.

Table 12.12

DIFFERENCES IN ACHIEVEMENT - CASTE-WISE

Test	Group	Mean	SD	t
Arith.	SC	16.6	7.2	1.70
	ST	19.9	9.4	
	BC	19.6	8.9	
	Others	12.6	00	
RC(P)	SC	18.1	6.2	2.12
	ST	21.1	8.5	
	BC	19.7	7.5	
	Others	16.0	00	
RC(S)	SC	7.7	2.9	2.19
	ST	8.0	3.4	
	BC	8.7	2.4	
	Others	4.1	0	
W.K.	SC	6.1	6.2	2.79*
	ST	19.1	7.0	
	BC	19.1	5.9	
	Others	17.0	0	

Test	Group	Mean	SD	t
A.W.	SC	8.6	4.2	1.51
	ST	10.2	5.1	
	BC	8.7	4.4	
	Others	6.0	0.0	
S.S.	SC	16.7	2.7	4.78
	ST	14.3	4.1	
	BC	13.0	4.2	
	Others	18.0	0.0	
Spelling	SC	12.8	4.7	0.29
	ST	13.7	6.2	
	BC	13.7	7.6	
	Others	12.0	0.0	
RC (total)	SC	25.7	8.8	2.34
	ST	30.3	11.2	
	BC	28.4	8.6	
	Others	20.0	0.0	
T (5 + 6 + 7)	SC	38.2	6.5	0.29
	ST	38.3	8.4	
	BC	35.4	8.8	
	Others	36.0	0.0	

SC - 37 ST - 466 BC - 7 Others - 1

p < .05 * p < .01

Ninety-one per cent of the pupils were children of the Scheduled Tribes, another 7% were from the Scheduled Castes. The other two groups were negligible, particularly 'Others'. Scheduled Tribes had a higher aggregate average of 107.8 as compared to 96.4 of the Scheduled Caste children. As the latter group was small in absolute numbers, too much cannot be seen in this difference. However, a tendency for the larger groups to have higher mean scores had been noticed in several States.

Factors Related to Pupil Achievement

Regression analysis was carried out for home background variables against two criterion scores, namely, in Arithmetic and Reading Comprehension. Before this step, the number of independent variables was reduced by combining them in three composite variables.

The regression coefficients for the variables entered in the three composite scores are given below.

Home Background

	RC	Arith
Location	-3.96	-1.72
Father's Occupation	3.42	2.33
Caste	2.18	1.71
Father's Education	0.27	0.21
Mother's Education	-1.44	-2.21
Number of Siblings	-1.55	-1.09
R	0.43	0.43

* p < .01

The two variables that contributed consistently and significantly in improving R between the criterion and the composite scores under this head were 'Father's Occupation' and 'Mother's Education', the latter had negative signs. 'Location' in general made a somewhat weaker contribution in that only one of the regression coefficients was statistically significant. It may be recalled that the differences over 'Location' were really reduced to differences between the capital city and the rest of the State.

R s for the composite variables were the highest when compared with other States.

Facilities for Learning

	<i>RC</i>	<i>Arith</i>
Attended Pre-school	6.19	7.82'
Place for Study	3.16	1.39
Help in Homework	3.61	1.44
Availability of Textbooks	-.62	.55
Availability of Study Material	-2.52'	-1.89'
Helping Household	-2.36'	-1.88'
Regularity in Attendance	-2.12'	-2.95'
<i>R</i>	.60	.67

" $p < .01$

'Attended Pre-school', 'Availability of Notebooks', 'Helping the Household' and 'Regularity in Attendance' - all had statistically significant regression coefficient in the calculation of composite score that would give the maximum correlation with achievement. Pre-school was attended by a little more than 50% of the pupils in Meghalaya, only 22% reported availability of most notebooks, contributing to differences in the facilities available for learning. The negative direction of the regression coefficients was difficult to understand.

The derived measure had a very high correlation with achievement. It is likely that the population of the State (or this sample?) is more clearly divided into privileged and underprivileged groups, enhancing the relationship between facilities and achievement.

Educational Environment at Home

	<i>RC</i>	<i>Arith</i>
Get Newspaper	-1.86	-4.50
Get Magazines	-4.30"	-3.94'
Books at Home	1.97	-1.71
Read Books	-.024	0.81
<i>R</i>	0.18	0.28

' $p < .01$

Significant regression coefficients with minus signs seemed to suggest the presence of a third untapped variable such as the money available in the family. Children of very rich families with facilities to buy magazines may not be doing well at school tasks, particularly at this level. The situation could look exaggerated if a community was divided more sharply into 'rich' and 'poor' groups with a very small middle class.

The three composite variables as obtained against scores on Reading Comprehension and five others were regressed with achievement in Reading Comprehension and Arithmetic, separately. The increments in R^2 are given in the following tables.

Table 12.13(a)

CONTRIBUTION OF PUPIL-RELATED VARIABLES TO ACHIEVEMENT IN READING COMPREHENSION

<i>Variable</i>	<i>R</i>	<i>R</i> ²	<i>Increment in R</i> ²	<i>F</i>	<i>r</i>
Facilities for Learning	.5903	.3485	.3485	272.28	.59
Word Knowledge	.6055	.3666	.0181	14.53"	.43
Age	.6123	.3749	.0083	6.75'	-.11
Similar Language	.6186	.3827	.0077	6.33'	.21
Home Background	.6220	.3869	.0042	3.50	.42
Gender	.6248	.3904	.0035	2.90	.07
Time Watch TV	.6254	.3911	.0007	0.57	.08
Edunl. Environ at Home	.6258	.3916	.0005	-	.17

$p < .01$

Table 12.13 (b)

CONTRIBUTION OF PUPIL-RELATED VARIABLES TO ACHIEVEMENT IN ARITHMETIC

<i>Variable</i>	<i>R</i>	<i>R</i> ²	<i>Increment in R</i> ²	<i>F</i>	<i>r</i>
Facilities for Learning	.6477	.4196	.4196	367.95	.65
Word Knowledge	.7068	.4996	.0801	81.27	.58
Similar Language	.7119	.5068	.0072	7.36"	-.25
Gender	.7135	.5091	.0023	2.42	.17
Time Watch TV	.7138	.5095	.0004	0.41	.06
Age	.7139	.5097	.0001	-	-.02
Edunl. Environ at Home	.7140	.5098	.0001	-	.22
Home Background	.7141	.5099	.0002	-	.40

' $p < .01$

'Facilities for Learning' turned out to be the most significant contributor to differences in pupil achievement in school. This composite variable reflected the family's concern with learning of school-related tasks by their wards. In deriving the composite score, regression coefficients of four variables, namely, 'Attended Pre-school', 'Availability of Notebooks', 'Helping Household' and 'Regularity in Attendance', were statistically significant but the latter three had negative signs. Those variables could be differentiating the rich and the poor, and the latter could be aspiring to raise their social status while the former took it easy at least at this stage. With this scenario the surrogate for pupil ability, namely, the scores on Word Knowledge got pushed to the second position. It may be noted that contribution of Word Knowledge to the explained variance for the two criteria differed. It was less than 2% for Reading Comprehension as against 8% for Arithmetic. The language spoken at home being the same as the medium of instruction at school was the third variable which had significant regression coefficients in the equations for maximising the correlations. The R^2 's were also high in Meghalaya.

'Age' added significantly to R^2 for Reading Comprehension but not for Arithmetic. More would be learnt in language from the environment, thus the older age group is more likely to improve their understanding and use of language. The same cannot be said about arithmetic.

The impact of individual-related variables on differences in achievements of pupils was presented in Tables 12.13 (a) and 12.13 (b). The percentage of variance explained by these variables in Meghalaya was very high -- it was 51% for Arithmetic -- the highest among all the States that participated in this study, and a quite high 39% for Reading Comprehension. The tendency for larger percentage of variance getting related to 'Home Background' variables was noted in many States of the North-Eastern region. A similar exercise was undertaken to study the influence of school-related variables on achievement of pupils.

In Meghalaya, the sample taken from most schools remained very small, increasing the chances of school means varying nearly as widely as those of the pupils. The standard deviation of the distribution of 64 school means in Arithmetic was 6.5 as compared to 9.2 for the spread of scores of 511 pupils. The former was very close to the median of 6.4 for all States while the latter was much larger than the corresponding median of 7.9 scores. The number of pupils in the study was the smallest in Meghalaya.

The school means could differ from each other because of differences in the facilities available and in the quality of teaching, or the differences in the communities they served. But these also differed because of small

samples, particularly, if only one pupil from a school took the test, the school mean would become as large or as small as the score of the pupil.

Table 12.14 (a)

CONTRIBUTION OF SCHOOL-RELATED VARIABLES
TO ACHIEVEMENT IN READING COMPREHENSION

Variable	R	R ²	Increment in R ²	F	t
Time Given (Arith.)	.5636	.3177	.3177	28.87	.56
Admn. of School	.6154	.3787	.0610	5.99	.30
Age of the Pupil	.6405	.4102	.0315	3.20	-.52
Facilities for Pupils	.6689	.4475	.0373	3.98	.29
Time given (Lang.)	.6844	.4684	.0209	2.28	.52
Boys/Girls/Co-ed	.6964	.4850	.0166	1.84	.13
Teachers Untrained	.7110	.5055	.0205	2.32	-.04

* $p < .01$

Table 12.14(b)

CONTRIBUTION OF SCHOOL-RELATED VARIABLES
TO ACHIEVEMENT IN ARITHMETIC

Variable	R	R ²	Increment in R ²	F	t
Time given (Lang.)	.6937	.4812	.4812	57.50	.69
Total Enrolment	.7428	.5518	.0706	9.61	.68
Age of the Pupil	.7819	.6114	.0596	9.20	.68
Percentage	.7937	.6299	.0185	2.96	.32
Attendance					
Professional	.8106	.6571	.0272	4.60	.46
Training of Headmaster					
Incentive Schemes	.8236	.6784	.0213	3.78	.66
Rooms per Class					
Group	.8305	.6897	.0113	2.04	.26
Admn. of School	.8374	.7012	.0115	2.11	.08
PTA	.8452	.7143	.0131	2.48	.07
No Detention Policy	.8537	.7289	.0146	2.85	.63
Facilities for Pupils	.8598	.7393	.0104	2.07	.06
Experiences as Headmasters	.8644	.7471	.0079	1.59	.10
Pre-Primary Class	.8697	.7564	.0092	1.90	.10
Time Given (Arith.)	.8749	.7655	.0091	1.90	.64

* $p < .01$

These were no variables which contributed statistically significant R^2 consistently in both the tables. The ones for which the increment in R^2 was significant with respect to one of the criterion variables and was above 2.00 in the other, were 'Age of the Pupil', 'Time given to Language', 'Time given to Arithmetic', 'Administration of the School' and 'Facilities for the Pupils'. 'Age of the Pupil' was found to be significant in Table 12.13 (a) as well but not in Table 12.13 (b). The average age of the pupils in a school turned out to be a significant contribu-

tor to differences in school means too. Both the 'r's were high but negative. The age of the pupils, in all likelihood, was representing differences in schools on some other variable(s). It was likely that schools followed different policies about the minimum age of children for admission to Class I. Differences in not detaining children, regardless of their achievement, were noticed. The schools where children were older tended to have lower means.

The time devoted to teaching of either of the two subjects went in the same direction, implying the source of difference to be the total time spent by the schools on teaching. It was noticed earlier that more teachers in Meghalaya said they did not correct homework or help weak students. More of them asked parents to arrange private tuition. The general impression was that of lesser responsibility by the administration of some of the schools. Generally, some uniformity is laid down for the time to be devoted to each subject but the schools in Meghalaya seem to vary on this variable. All the 't's had high positive values.

'Administration of the School' and 'Facilities for Pupil' made significant contributions to R^2 with respect to

Reading Comprehension ('r' was 0.30 and 0.29) but the same were not significant for Arithmetic. In contrast, the size of the school (total enrolment) and the professional training of the headmaster both seemed to make some difference to the learning of arithmetic. The direction of the correlation of the former variable suggested schools with large enrolment to be at an advantage. The pressure for admission to schools securing better performance of the pupils may be the underlying variable.

The total variance attributable to differences in the school-related variables turned out to be high -- as in the case of between-pupil variances. It was 64% for Reading Comprehension and 78% for Arithmetic. A higher R^2 value for arithmetic was expected in this set of tables but the same were high even in Tables 12.13(a) and 12.13(b). As has been said earlier, the samples of schools and pupils were not found to be representative of the groups in the State. The same were also limited in numbers, data from only 64 schools were used for analysis of between-school variances. The interpretations need to be read in the light of these facts.

Table 12.A
INTER CORRELATIONS OF PUPIL-RELATED VARIABLES AND ACHIEVEMENT

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32		
1	1	00	-03	-03	-09	04	06	-07	-09	-03	-00	-15	-10	-05	-01	05	01	-06	02	-11	-08	-13	-07	-13	-07	-01	-16	05	-22	-12	-30	-13	-12
2	1	00	-05	-10	05	05	-10	-05	-05	09	-06	-04	03	-01	-05	-08	-06	-03	-07	-03	04	-02	-11	-09	03	02	-03	-07	-11	-06	-04	-04	
3	1	00	21	-07	-14	27	-02	-04	01	13	16	-06	-06	16	-08	-08	-02	-04	06	12	17	.07	.03	06	08	-09	07	07	16	24	-01		
4	1	00	.08	17	42	-06	-12	06	15	24	-27	-19	-35	-30	-13	-24	-05	-04	02	33	38	31	29	29	29	-31	29	38	87	47	23		
5	1	00	23	01	07	01	11	-03	05	-09	-07	-09	-04	-22	-26	-08	05	01	07	08	06	11	05	-14	03	07	15	06	22				
6	1	00	.10	-00	-09	14	02	08	-14	-12	-16	-02	-08	-14	.13	-16	-04	.25	22	15	25	27	-29	18	21	16	17	22					
7	1	00	-16	-33	-07	29	35	-45	-14	-49	-52	-15	-13	-03	02	12	62	53	39	49	54	-53	53	52	47	85	14						
8	1	00	40	-02	19	02	26	.15	19	27	07	-01	02	07	18	-10	-05	-02	-14	-16	11	-12	-05	-10	-16	-02							
9	1	00	.06	.03	-09	47	04	36	52	-01	-07	04	11	07	30	-21	08	-33	-32	35	-24	-18	-41	-37	04								
10	1	00	-15	-09	02	-07	03	01	-08	-14	03	02	-06	-06	-07	-03	-08	-11	02	-04	-06	-13	-08	13									
11	1	00	37	-17	08	-19	-16	08	05	12	08	25	.26	29	28	16	17	-22	23	30	17	49	-04										
12	1	00	-33	22	-11	.36	-05	23	08	10	17	30	33	30	19	25	21	25	34	28	51	-10											
13	1	00	05	51	62	00	-08	06	01	-02	-37	-37	-28	-35	-40	37	-35	-37	-39	-60	02												
14	1	00	-37	-17	08	-19	-16	08	05	12	08	25	.26	29	28	16	17	-22	23	30	17	49	-04										
15	1	00	53	08	21	04	03	-05	-50	-41	-29	-41	-43	47	-41	-40	-42	-66	-18														
16	1	00	11	-06	04	03	01	-49	43	-31	-46	-52	48	-45	-42	-41	-69	00															
17	1	00	28	.36	19	10	-22	-08	-06	-24	-13	21	-09	-08	-11	-15	-35																
18	1	00	19	14	08	-23	-17	-12	-23	-15	24	-14	-17	-18	-10	-74																	
19	1	00	34	28	-14	01	00	-11	-03	08	.03	01	-04	-00	02																		
20	1	00	47	-05	-02	-02	-10	-00	05	08	-02	-05	03	-09																			
21	1	00	06	07	08	-07	02	01	.10	08	04	13	-03																				
22	1	00	51	36	58	63	-59	47	50	40	65	22																					
23	1	00	74	44	53	-48	50	98	43	60	18																						
24	1	00	31	39	-34	37	86	30	46	12																							
25	1	00	55	-54	44	43	38	.53	22																								
26	1	00	-54	.49	52	40	59	17																									
27	1	00	-38	-47	-40	-58	-24																										
28	1	00	49	38	57	17																											
29	1	00	42	59	17																												
30	1	00	59	35																													
31	1	00	25																														
32	1	00																															

Table 12-B

INTER CORRELATIONS OF SCHOOL-RELATED VARIABLES AND ACHIEVEMENT

[illegible]

Mizoram

The State of Mizoram was requested to administer the test battery to approximately 1,000 pupils who would have studied up to Class IV in the formal school system. It was estimated that these many children would be available from about 70 schools. The State returned data for 926 pupils of Class IV from 69 schools. It worked out to be a rather high correspondence between enrolment and attendance.

Table 13.1

SAMPLES PLANNED AND ENTERED IN ANALYSES

Region	No. of Schools	No. of Pupils
Capital City	9 ¹	196
	14 ²	231
Lunglei	59	803
	55	695
Total	68	999
	69	926

The State increased both the number of pupils and the number of schools from the capital city. A supplementary list of schools was made available to the States to enable them to make up the required number of pupils. Mizoram included more schools from the capital city.³ As there was significant difference between the mean achievements of pupils from the capital city and Lunglei, this deviation enhanced the State averages.

The representativeness of the sample in a State was also checked by comparing some of the statistics obtained from the data with those obtained in the Fifth All India Educational Survey conducted by the NCERT in 1986.

Table 13.2

SAMPLE AS COMPARED TO THE POPULATION

Variable	Percentage	
	1986 Survey	Sample in the Study
Primary (only) Schools	99.2	96.8 ⁴
Girl Students	47.6	49.1 ⁵
Scheduled Caste Students	0.0	3.8 ⁶
Scheduled Tribe Students	100.0	92.5 ⁶
Women Teachers	44.1	53.0 ⁶
Trained Teachers	57.6	90.2 ⁷

There were 2.4% fewer primary (only) schools in the sample of this study. This deviation had arisen because of including one middle and one secondary school that had primary sections. As the total number of schools in the sample was small, giving representation to the two small strata caused this apparent difference.

The increase in the proportion of girls and Scheduled Caste pupils was in the expected direction as the drive to get more of these groups into schools continues. Part of the decline in the proportion of ST pupils could be due to other groups joining schools. The proportion of women teachers had also increased in several States. In general, more women are joining the organised workforce, and school teaching being one of the favourite areas of work both for the employees and the employers, the increment in the percentage of women teachers was not surprising.

The percentage of trained teachers was much higher in this sample. This could be due to a change in the required qualifications for recruitment of teachers at a particular point of time. Such a situation would lead to a big change over a certain period of time.⁷

1 The number planned.

2 The number retained.

3 It was explained by the State Coordinator that some schools could not be reached because of landslides, etc.

Source:

4 The School Questionnaire.

5 The Pupil Questionnaire.

6 The Teacher Questionnaire.

7 The State Coordinator confirmed, "Untrained teachers recruited earlier were trained in large numbers by the State during this interval."

Although the statistics on all the variables compared in Table 13.2 differed from those obtained in 1986, it could not be said that the sample was biased, except for trained teachers

The Tests in Mizoram

The State participated in the try-out of the test items. Although material or questions were not contributed by the State at an earlier stage, it translated and administered the first draft of the tests, gaining the advantage of improving the same after the feedback

Table 13.3

DIFFICULTY VALUES OF ITEMS

Pass Percentage	Arith.	RC(P)	RC(S)	W.K.	A.W.	S.S.	Spell.
0 - 9		1	-	1	-	-	-
10 - 19		-	2	-	-	-	1
20 - 29	5	2	1	-	1	1	5
30 - 39	9	5	1	1	1	2	4
40 - 49	6	6	3	6	3	2	4
50 - 59	5	5	4	6	3	2	7
60 - 69	7	14	2	13	9	1	3
70 - 79	6	9	2	8	4	6	1
80 - 89	1	2	1	4	3	4	-
90 - 99	-	-	-	1	-	-	-
Median	49.5	61.6	52.0	64.1	63.9	71.2	45.7

The tests proved easy for the State, with 65% of all items having been answered correctly by more than 50% of the students. The easiest test was the one on Sentence Structure which along with the test on spelling was constructed by the State centre itself. The alternatives (of the structure of a sentence) chosen in this test could become too obviously incorrect enabling more students to identify the correct answer easily. The test that was least likely to be affected in translation, namely, Arithmetic, proved to be of average difficulty. Even the test in Reading Comprehension was expected not to change very much in difficulty, in the process of translation. It proved easy in the State.

Even at the try-out stage the pass percentage on items in Mizoram were quite high.

The Groups in the Study

The pupils

Of the 926 pupils of Class IV who responded to the questionnaire meant to elicit data regarding the background variable of the children, 59% were from rural areas and 49% were girls. Most of the children (92.5%) belonged to Scheduled Tribes. Four per cent were Scheduled Castes and 3% Other Backward Classes. The average age of these children was 10.5 years.

The fathers of 17% and mothers of 35% children were illiterate, another 31.5% fathers and 41% mothers had studied only up to Class V. On the other side, 4% fathers and less than 1% mothers had gone to college. Only 32% fathers were farmers; nearly 11% were either professionals or held high-salaried jobs; 8% were unskilled workers, and 13% were classified under 'Others' which would include unemployed persons also. Thirteen per cent children came from small families of one or two children; the rest were nearly balanced over 3-4, or more than four children in the family.

A very large 81.5% had attended some pre-school programme, and only 10% spoke at home some language other than what was their medium of instruction at school, namely, Mizo.

Eighty-two per cent children had most of the textbooks and 69% had an adequate quantity of other study material such as notebooks, etc. Only 3% children had few books; inadequate availability of other study material was reported by 8.5% children. More than three-fourths of the children received help from the family in their studies but only 24% had some fixed place where they could sit and study. Nearly 60% children said they could attend school on most days, 4% had to miss it quite often. Families also required children to help with domestic or earn-a-living related work — 50% children did it for two or more hours every day.

A newspaper was received in 57% of the homes; the statistic is the highest among all the States, magazines were also received by a high 41% families. Eighty-nine per cent of the homes had some books other than textbooks and 81% children said they read something besides their school books. Only 21% children watched some television.

The pupils from Mizoram had some advantages. The majority had attended pre-school. The children were receiving instruction in their mother tongue. Textbooks and other study material were available to a large number. The homes had an environment that would encourage children to read.

The percentage of children who could attend school most of the days was not very high.

The Teachers

A sample of 215 teachers teaching primary classes responded to the Teacher Questionnaire. Of these, 52% were teaching in rural areas, 53% were women. Sixty-two per cent of the teachers were more than 35 years of age, but more than 50% had taught for only five years or less, and the rest between 5 to 10 years.

Education-wise, the teachers from Mizoram were not a well-equipped group. Thirty-seven per cent had not

studied up to Class X, another 50% were matriculates, only 12% had passed their senior secondary examination; a negligible 1% were graduates

Some in-service education had been received by a large 82% of the teachers

Few teachers in Mizoram tried any innovative practices in teaching but they did believe that adopting alternative strategies was likely to improve both the interest and achievements of pupils. Only 36% teachers said they often used some study material other than textbooks in their teaching, another 50% used it occasionally. A high 90% teachers had prepared some material themselves and 71% reported having involved even their pupils in this task. A majority of 60% teachers evaluated pupil learning 2-3 times a year but 3% depended only on a single annual evaluation, on the other side, 38% gave monthly tests. But nearly half the teachers used the findings of these evaluations for one purpose, most probably promotion, only

Ninety-eight per cent of the teachers had copies of the textbooks -- mostly from the school library -- and 85% had easy access to the language dictionary either in the school library or as their personal copy. Eighty-five percent teachers said they helped weak students by paying them special attention but 15% asked parents to arrange private tuition. Regular checking of homework was reported by 95% of the teachers. Only 49% said their pupils often asked questions in class.

Most teachers lived quite close to their schools and did not have to spend too much time travelling to and from their schools.

The teachers in Mizoram had not received adequate education themselves. They kept to the more traditional styles of teaching. Textbooks, etc., were available to most of them. They did not have to spend too much time in travelling.

The Headmasters

Most of the headmasters⁸ in Mizoram were trained, nearly 50% of them had received one year, and another 46% two years of professional education designed for primary school teachers. Three per cent were untrained, only one of them had a B Ed degree. They were quite senior in age, 57% being 50 years and above; 5% were less than 35 years old. Corresponding to their age, 89% had taught for more than 15 years; only 2% were new recruits having worked for less than five years as a teacher but 14% had been headmasters for less than five years.

The Schools

Seventy per cent of the schools were in urban areas, with the exception of two schools, one being a middle school and the other a secondary school, the rest were primary (only) schools. All except one were managed by the State (or Central) government, schools admitted both boys and girls. Sixteen per cent schools were relatively new, having been opened in the last decade, only 57% had been in existence for more than 20 years. Pre-primary sections were attached to 8% of the schools.

A separate room was available for 13% of the headmasters but 65% schools had a common room for the teachers. Fifty-two per cent schools had the facility of drinking-water, but separate toilets for girls were available in 16% schools only.

Fifty-seven per cent schools had Book Banks, and the average number of books in the school library was 288.

The practice of 'No-Detention' in early grades was not followed by a large 73% schools, and another 6% did not respond to this question, they could also belong to this category, only 3% schools said they did not detain pupils right up to Class IV. Fifty-four per cent schools had received the benefits of Operation Blackboard. A PTA existed only in 14% of the schools, which had one to three meetings every year.

All schools were managed by the government in Mizoram; more than half of them had benefited from Operation Blackboard. The 'No-Detention' policy was not followed by a large percentage.

Achievements of Pupils

The test battery was administered to 926 pupils of Class IV selected from 69 schools in Mizoram. Their achievements are analysed in the pages that follow.

Table 13.4

ACHIEVEMENTS OF PUPILS

Test	Arith. (40) ⁹	RC(P) (44)	RC(S) (16)	WK (40)	AW (24)	S.S. (18)	Spell (25)	Total (207)
Mean	20.6	25.5	8.1	25.6	14.9	11.4	11.4	117.5
SD	6.9	8.1	3.0	5.7	4.5	3.3	4.1	
Mean as Percentage	51.5	57.9	50.6	64.0	62.1	63.3	45.6	56.8
KR-20	.83	.88	.65	.76	.78	.73	.70	
All India Median as Percentage	41.2	45.4	43.1	49.5	41.7	57.8 ¹⁰	42.8 ¹⁰	45.2

⁸ N = 63.

⁹ The maximum possible score.

¹⁰ Tripura is excluded. The content of the tests was not common in all the States.

The overall achievement in the State was highly satisfactory, being 56.8% of the total. The only test on which it was observed to be less than 50% was the test in spelling. It may be recalled that the tests of Sentence Structure and Spelling were prepared by the States themselves. These could be more different in difficulty levels than the others which were common to all the States. The next lowest mean was on Reading Comprehension (sentences), which had been so along with the mean on Appropriate Word in most States. However, the average score on Appropriate Word was high in Mizoram.

The total achievement was next only to Bihar. Standard deviations and the reliability coefficient tended to be on the lower side.

All the States were requested to administer the test battery to a small sample¹¹ of children of Class V as well. The purpose was to study the gain over one academic year. The achievements of these two groups are tabulated below.

Table 13.5

MEAN ACHIEVEMENT OF PUPILS — CLASSES IV & V

Class	Arith	RC(P)	RC(S)	WK	A W	S.S	Spell	Total
IV (926)	20.6	25.5	8.1	25.6	14.9	11.4	11.4	117.5
V (42)	19.4	22.8	7.3	24.9	14.2	10.8	10.2	109.6

Not only was the aggregate score of pupils of Class V lower than that of pupils of Class IV, the same were lower on each of the seven tests of the battery, adding to a difference of eight points in the total. This difficult-to-explain picture had emerged in several other States as well. While 'recency' could play some role in specific skill-oriented tests such as in arithmetic, it had no significance in tests of reading comprehension or others related to the learning of language.

The sample of schools was drawn from the capital city of Aizawl and from the district Lunglei for the rest of the State. Achievement in the capital city was higher with the maximum difference in Reading Comprehension. The differences and the direction of the same were as expected. As the capital cities tend to have a higher concentration of educated, salaried and professional groups, it was hypothesised that the children in the capital city in any State would achieve higher than in any other region.

Table 13.6

ACHIEVEMENTS OF PUPILS -- REGION-WISE

Region	Arith	RC(P)	RC(S)	WK	A W	S.S	Spell	Total
Capital City								
Mean	21.3	28.0	8.7	26.3	15.4	11.7	12.1	123.5
(231) SD	7.4	7.4	3.2	5.8	4.8	3.9	3.9	
Lunglei								
Mean	20.3	24.6	7.9	25.4	14.7	11.3	11.1	115.3
(695) SD	6.7	8.2	2.8	5.6	4.4	3.1	4.1	

The achievements of children on two of the tests, namely, Arithmetic and Reading Comprehension (para), were also studied objective-wise, and in the case of Arithmetic topic-wise too.

Table 13.7

ACHIEVEMENT IN ARITHMETIC -- OBJECTIVE-WISE

Objective	Mean	SD	Mean as Percentage
Knowledge (19) ¹²	10.3	3.5	54.2
Understanding (12)	6.7	2.7	55.8
Application (9)	3.6	2.0	40.0
Total (40)	20.6	6.9	51.5

No difference was observed in achievements on items categorized under Knowledge and Understanding in several States. It could be due to basically little difference in the items at this level. The smaller mean percentage on items requiring application of knowledge was in the expected direction.

Table 13.8

ACHIEVEMENT IN ARITHMETIC -- TOPIC-WISE

Topic	Mean	SD	Mean as Percentage
Time (3)	1.6	1.0	53.3
Factors and Multiples (7)	3.7	1.6	52.8
Fundamental Operations (12)	5.8	2.5	48.3
Weights and Measures (3)	1.5	.9	50.0
Fractions (5)	2.3	1.4	46.0
Decimals (7)	3.9	1.3	55.7
Unitary Method	1.8	.9	60.0
plus Others (3)			
Total (40)	20.6	6.9	51.5

¹¹ A sample of 200 pupils to be selected from at least 10 schools considered representative on the basis of judgment was suggested.

¹² The maximum possible score.

The pattern of achievements over topics was similar to that observed in most other States. The highest percentage score (60%) on Unitary Method, followed by that on Decimals (56%), had been observed elsewhere as well. Greater similarity of items with the questions practised in the classroom could be playing a role in higher scores. Unitary Method did not involve understanding of any basic concept. That the 'recency' of learning plays an important role was supported by the high score on Time and low score on Fundamental Operations.

Table 13.9

ACHIEVEMENT IN READING COMPREHENSION
OBJECTIVE-WISE

Objective	Mean	SD	Mean as Percentage
Noting Detail (17)	10.6	3.5	62.3
Simple Comprehension ¹³ (13)	7.7	2.9	59.2
Inference ¹⁴ (14)	7.1	2.6	50.7
Total (44)	25.5	8.1	57.9

The mean scores on the three objectives were in the expected direction. All the three were fairly high as the overall mean on the tests was high.

The achievements of pupils as divided over location, gender and castes were also compared.

Table 13.10

DIFFERENCES IN ACHIEVEMENT — LOCATION-WISE

Test	Location	Mean	SD	t
Arith.	U	19.4	6.4	4.36*
	R	21.4	7.0	
RC(P)	U	25.0	8.0	1.34
	R	25.7	8.0	
RC(S)	U	8.0	2.9	.41
	R	8.1	3.0	
W.K.	U	26.0	5.7	1.35
	R	25.4	5.6	
A.W.	U	14.8	4.4	.71
	R	15.0	4.6	
S.S.	U	11.1	3.5	2.53
	R	11.6	3.2	
Spelling	U	11.0	3.9	2.13*
	R	11.6	4.2	
RC (total)	U	33.1	9.8	1.21
	R	33.9	10.0	
T(5 + 6 + 7)	U	36.9	9.0	2.24
	R	38.2	9.1	

Urban = 382 Rural = 544

* $p < .05$; ** $p < .01$

¹³ This includes:

- (a) deriving meaning of difficult words from the context, and
- (b) relating things at a simple level.

¹⁴ This includes identifying the message or the central idea and the title of the write-up

The rural children tended to do somewhat better than the urban children, their aggregate mean of 118.8 was higher than 115.3 of the latter. The difference on the test in arithmetic was statistically significant. The difference is in contrast to the one noticed between pupils from the city of Aizawl and the district of Lunglei, where the students from the capital city had a higher achievement than those from the district. It implies a much higher difference between urban and rural children in the rest of the State, with an advantage for the rural children.

Table 13.11

DIFFERENCES IN ACHIEVEMENT — GENDER-WISE

Test	Gender	Mean	SD	t
Arith.	B	19.9	6.5	2.75*
	G	21.2	7.2	
RC(P)	B	25.5	8.5	0.20
	G	25.4	7.8	
RC(S)	B	8.3	3.0	2.17*
	G	7.9	2.9	
W.K.	B	25.7	5.5	0.29
	G	25.6	5.9	
A.W.	B	14.8	4.4	0.88
	G	15.0	4.5	
S.S.	B	11.3	3.4	1.21
	G	11.6	3.2	
Spelling	B	11.2	4.2	1.24
	G	11.5	4.0	
RC (total)	B	33.8	10.3	0.81
	G	33.3	9.5	
T(5 + 6 + 7)	B	37.2	9.1	1.44
	G	38.1	9.1	

Boys = 471, Girls = 455

$p < .05$; ** $p < .01$

The picture regarding differences between boys and girls was similar to that of differences over location, with a small advantage for girls in the aggregate score. The differences on the tests of arithmetic and RC(S) were statistically significant, but one each in favour of boys and girls. Mizoram had a high 49% of girls in the sample. Ignoring Delhi, where the percentage of girls went beyond 50% because of inclusion of more schools meant for 'girls only', this is the highest compared to all other States — higher even than in Kerala where universalisation of primary education has been nearly achieved.

The Scheduled Tribes group, that was the major group being 92% in the State, had the highest aggregate of 117.8 scores, SC had the lowest achievement. The differences on the individual tests were small, none was statistically significant, the size of the sample of groups other than STs was very small.

Variables Related to Pupil Achievement

One of the objectives of this study was to identify such variables as influenced the achievements of pupils. Data regarding individual characteristics and home background of the pupils were regressed with scores on Arithmetic and Reading Comprehension. Before this step, several home-related variables were combined to get three composite scores.

Table 13.12

DIFFERENCES IN ACHIEVEMENT — CASTE-WISE

Test	Group	Mean	SD	F
Arith	SC	18.7	6.9	1.21
	ST	20.7	6.9	
	BC	19.5	5.2	
	Others	20.1	5.5	
RC(P)	SC	21.5	7.7	2.87
	ST	25.6	8.1	
	BC	25.6	7.6	
	Others	24.4	5.5	
RC(S)	SC	7.1	2.9	2.16
	ST	8.1	2.9	
	BC	7.2	3.2	
	Others	8.1	2.1	
W.K.	SC	25.9	5.6	23
	ST	25.7	5.7	
	BC	25.0	5.4	
	Others	24.4	5.3	
A.W.	SC	14.9	4.2	99
	ST	14.9	4.5	
	BC	16.0	4.7	
	Others	13.0	5.0	
S.S.	SC	10.9	3.0	57
	ST	11.4	3.3	
	BC	11.7	3.6	
	Others	12.4	2.8	
Spelling	SC	10.7	4.5	.49
	ST	11.4	4.1	
	BC	10.9	3.7	
	Others	11.4	3.5	
RC (total)	SC	28.7	9.3	3.03
	ST	33.8	10.0	
	BC	32.9	9.3	
	Others	32.6	9.6	
T(5+6+7)	SC	36.5	8.1	33
	ST	37.7	9.2	
	BC	38.6	8.8	
	Others	36.9	9.1	

SC - 35 ST - 856 BC - 28 Others - 7

p < .05

The regression coefficients for the variables entered in the three composite variables are given below.

Home Background

	RC	Arith
Location	.48	1.82
Father's Occupation	-.26	-.26
Caste	1.43	.14
Father's Education	-.22	-.00
Mother's Education	-.25	-.10
Number of Siblings	.24	.07
R	.08	.16

p < .05, * p < .01

None of the regression coefficients were statistically significant in relation to Reading Comprehension. 'Location' and 'Father's Occupation' made significant contribution to differences in Arithmetic. The composite score had small 'R's with the criterion variables but it was higher for Arithmetic.

Facilities for Achievement

	RC	Arith
Attended Pre-school	-.39	-.03
Place for Study	-2.49	-1.42
Help in Homework	.43	-.72
Availability of Textbooks	.97	.67
Availability of Study Material	.91	1.57
Helping Household	2.35	.66
Regularity in Attendance	.06	.91
R	.22	.23

* p < .01

The two variables having consistently significant regression coefficients were a place for study at home and helping the family with domestic work.

Educational Environment at Home

	RC	Arith
Get Newspaper	-.83	-1.09
Get Magazines	.26	.36
Books at Home	1.25	.65
Reads Books	-.11	.33
R	.12	.11

p < .05, * p < .01

The variable contributing most significantly in maximising R with this set of variables was the number of books at home which probably indicated the family's interest in learning. The level of parents' education by itself did not seem to be significant.

These three composite variables along with five others were regressed with achievements in Reading Comprehension and Arithmetic; their contribution to R² are given below.

Table 13.13(a)CONTRIBUTION OF PUPIL — RELATED VARIABLES
TO ACHIEVEMENT IN READING COMPREHENSION

Variable	R	R ²	Increment in R ²	F	r
Facilities for Learning	2053	0421	0421	40.64	21
Word Knowledge	2748	0755	0334	33.32	21
Similar Language	3033	0920	0164	16.72	17
Time Watch TV	3106	0965	0045	4.61	-08
Age	3112	0969	0004	0.37	-06
Eduatl Environ	3117	0972	0003	-	09
Gender	3118	0972	0000	-	-03
Home Background	3118	0972	0000	-	05

*p < .01

Table 13.13 (b)CONTRIBUTION OF PUPIL - RELATED VARIABLES
TO ACHIEVEMENT IN ARITHMETIC (22)

Variable	R	R ²	Increment in R ²	F	r
Word Knowledge	2081	0433	0433	41.72	21
Facilities for Learning	2484	0617	0184	18.10	16
Gender	2709	0734	0117	11.66	09
Similar Language	2796	0782	0048	4.79	11
Time Watch TV	2837	0805	0023	2.31	-06
Home Background	2862	0819	0014	1.41	.07
Age	2869	0823	0004	0.40	-06
Eduatl. Environ	2869	0823	0000	-	07

* p < .01

The test of Word Knowledge was used as a surrogate for pupil ability. In most of the States, it tended to contribute very substantially to R² in relation to both the criterion variables. While it had retained its position towards the top, the correlation and increments to R² were low in Mizoram.

The two variables which made consistently significant contributions to R² for both the criterion variables were 'Facilities for Learning' and 'Similarity of Language'; only 10% of the pupils said their home language was other than Mizo which was the language of instruction in schools. It is likely that this group had other socio-economic handicaps as well.

Gender contributed to differences in achievement in arithmetic. Only a small but statistically significant difference in the mean achievements of boys and girls on the test of arithmetic was seen in favour of the latter.

'Time Watch TV' made some contribution to increment in R² which was statistically significant for Reading

Comprehension. Nearly 22% children in the sample said they had TV at home. As the availability of programmes in Mizo could not be considerable, the underlying variable was likely to be some other, the economic status of the family is a likely one.

The total variance explained by pupil-related variables in Mizoram was very low, which could be due to a rather homogeneous population.

In the two parts of the preceding table, the impact of pupil-related variables, both individual and those associated with the home, was studied. In Mizoram, the percentage of variance accounted for in this analysis remained very low (less than 10% for either criterion). Either the homes could be very homogeneous or the schools highly influential in the State.

If the facilities available and practices adopted were different from school to school, the average achievement of pupils could also differ for that reason. 'Gender' contributed to differences in achievement in arithmetic. Only a small but statistically significant difference in the mean achievements of boys and girls on the test of arithmetic was seen in favour of the latter.

All the school-related variables on which data were collected in this study, excluding those providing information about teachers, were regressed with pupil-achievement. The school means differed from each other nearly as much as the scores of the pupils. The standard deviation of 57 means in the test for arithmetic was 5.7 scores as compared to 6.9 for 926 pupils.¹⁵ This worked out to be 80% as large.

Table 13.14(a)CONTRIBUTION OF SCHOOL-RELATED VARIABLES
TO ACHIEVEMENT IN READING COMPREHENSION

Variable	R	R ²	Increment in R ²	F	r
Experience as Headmaster	4183	1749	.1749	7.85	42
Age of the Pupil	5084	2584	0835	4.05	17
Room for the Headmaster	5603	3140	0555	2.83	-21
Facilities for Teachers	6004	3605	0465	2.47	14
Proportion SC/ST	6469	4184	0580	3.29	-23
Books in the Library	6851	4693	0509	3.07	21
Teachers Untrained	7145	5106	0412	2.61	-27
Classes in School	7448	5548	0442	2.98	04
Operation Blackboard	7683	5903	0355	2.52	-05
No Detention Policy	7885	6217	0314	2.32	.11
Pre-primary Classes	8018	6429	0213	1.61	04
Age of the Headmaster	8093	6550	0121	.91	23
Book Bank	8167	6670	0119	1.07	-11

p < .05, * p < .01

¹⁵ Both the values obtained for the State were lower than the medians for all the States in the study.

Table 13.14(b)CONTRIBUTION OF SCHOOL-RELATED VARIABLES
TO ACHIEVEMENT IN ARITHMETIC

<i>Variable</i>	<i>R</i>	<i>R²</i>	<i>Increment in R²</i>	<i>F</i>	<i>r</i>
Total Enrolment	2436	0593	0593	2.33	24
Rooms per Class					
Group	3470	1204	0611	2.24	21
P.T.A.	4.5	1718	0514	2.17	23
Teachers Untrained	4588	2105	0387	1.66	-19
Location	4832	2335	0230	.99	05
Experience as Headmaster	5175	2678	0344	1.50	11
Time given (Arith.)	5407	2924	0246	1.08	16
Proportion SC/ST Teachers per Class	5603	3139	0215	.94	-11
Group	5871	3447	.0308	1.36	22
Operation Blackboard	5997	3597	0150	.65	-04

In the two tables given above most of the variables which did not contribute a statistically significant increment to R^2 were omitted¹⁶ In contrast to Tables 13(a) and 13(b), the variance explained by school-related variables was very large, being 73% for Reading Comprehension and 42% for Arithmetic. It was hypothesised that the contribution to R^2 with respect to pupil-related and school-related variables would tend to be complemen-

tary, i.e., low values of R^2 in one set of tables would be accompanied by high values of the same in the other set. It was so in Mizoram. But the hypothesis that the school-related variables would contribute more variance associated with achievement in arithmetic than with reading comprehension was not sustained in the State. R^2 values were high for Reading Comprehension in both sets of analyses, the same were much higher for between-school analysis.

In spite of the total high R^2 in Tables 13.14(a) and 13.14(b), only two variables, namely 'Experience as Headmaster' and 'Age of the Pupil', made significant contributions with respect to Reading Comprehension. Neither the significance nor the positive direction of the latter variable could be understood easily. With the exception of one school, all others were under the same administration, they were likely to have a common policy for the age of entry to Class I. The children are generally free to join school at a higher age.

In Mizoram, pupil- and home-related variables made a very limited difference to achievements of pupils, schools seemed to make a greater difference. Even in case of the latter, not many variables made highly noticeable differences, but the addition to R^2 kept piling up slowly and steadily. In other words, a large number of variables made small differences.

¹⁶ Only those variables where F was larger than 2.00 are retained in these tables.

INTER CORRELATIONS OF PUPIL-RELATED VARIABLES AND ACHIEVEMENT

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32																										
1	1.00	18	02	-	.10	.06	01	00	-	19	-	.18	08	04	-	02	-	09	-	12	-	11	.05	-	16	03	-	17	-	02	-	21	14	04	.01	-	04	03	08	07	.04	26	-	16	-	11												
2			1.00	-	14	08	03	-	10	-	06	-	27	-	24	.14	03	-	12	-	13	-	11	-	01	-	05	-	14	-	03	-	12	-	00	-	10	-	06	-	07	01	-	10	-	07	-	02	-	09	-	06	09	-	08	-	06	
3				1.00	05	-	07	-	02	05	02	06	01	03	01	05	02	-	15	04	-	03	-	01	-	01	03	-	01	09	-	01	-	07	-	01	03	04	04	-	03	-	08	-	12	-	02											
4					1.00	.06	-	01	04	-	23	-	.11	-	02	-	09	-	03	-	04	-	02	-	11	-	05	-	04	-	10	-	07	-	03	01	-	09	-	05	-	00	-	03	-	04	-	11	-	10	-	04	-	30	-	05	-	03
5						1.00	-	05	-	03	-	03	-	05	01	-	07	-	00	03	-	03	02	-	01	-	01	-	02	-	01	.08	02	02	05	01	-	03	00	04	01	05	35	05	-	01												
6							1.00	06	10	01	-	02	-	04	13	10	.06	08	04	06	-	01	16	-	02	-	04	11	16	14	14	10	07	11	17	-	02	12	11																			
7								1.00	04	06	-	00	02	.10	04	10	.06	05	12	07	-	06	13	05	.02	-	01	03	-	02	-	00	.05	01	00	-	03	02	-	06																		
8									1.00	42	-	05	11	21	05	10	05	06	23	14	18	04	08	-	02	-	03	-	02	-	03	-	06	-	06	-	05	-	03	-	23	04	.09															
9										1.00	-	11	07	08	02	15	09	08	13	09	03	04	12	-	03	-	04	-	01	-	05	-	01	-	04	-	01	-	04	-	29	06	-	03														
10											1.00	-	01	.08	-	02	-	06	-	07	04	-	02	-	05	06	09	-	08	.02	-	01	-	01	-	02	-	03	02	01	-	01	-	08	-	06	03											
11												1.00	09	00	08	02	01	12	13	04	-	01	10	-	08	-	08	-	10	-	03	-	13	-	07	-	10	-	10	03	-	40	04															
12													1.00	15	06	-	00	04	20	11	19	07	-	02	-	04	02	01	.03	02	04	.04	02	05	07	10																						
13														1.00	38	07	10	12	06	18	02	-	00	11	08	06	08	07	08	09	08	01	35	.11																								
14															1.00	13	14	11	12	05	05	-	02	18	09	04	08	08	08	11	09	-	05	39	03																							
15																1.00	03	05	04	03	01	01	09	17	13	10	08	15	09	17	03	74	03																									
16																	1.00	04	04	02	01	-	08	.10	02	00	02	08	06	06	01	01	06	02																								
17																		1.00	30	14	06	04	-	06	-	02	-	03	01	-	03	-	07	-	05	-	02	-	06	05	-	12																
18																			1.00	09	08	00	01	01	00	01	-	02	05	05	01	-	03	01	05																							
19																				1.00	17	02	08	12	05	08	08	11	08	11	-	02	09	73																								
20																					1.00	09	04	02	-	01	02	02	01	-	05	01	01	03	08																							
21																						1.00	-	06	-	06	-	09	-	01	-	04	-	10	-	05	-	08	01	-	02	06																
22																							1.00	29	23	21	35	31	.33	31	07	16	07																									
23																								1.00	51	19	35	33	46	97	06	19	09																									
24																									1.00	16	33	23	38	71	01	16	05																									
25																										1.00	24	24	16	21	-	00	.12	05																								
26																											1.00	37	32	39	03	15	06																									
27																												1.00	45	33	06	16	08																									
28																													1.00	49	03	14	.05																									
29																														1.00	05	21	09																									
30																															1.00	28	51																									
31																																1.00	29																									
32																																	1.00																									

Table 13-B
INTER CORRELATIONS OF SCHOOL-RELATED VARIABLES AND ACHIEVEMENT

[illegible]

Nagaland

Nagaland was expected to administer the test battery on 1,100 pupils of Class IV who were to be selected from approximately 70 schools. To begin with, the data of 916 pupils from 80 schools were retained for analyses. Thus 80% of the pupil sample was made available by the State from what looked like the targeted number of schools ¹

Table 14.1

SAMPLES PLANNED AND ENTERED IN ANALYSES

Region	No. of Schools	No. of Pupils
Capital City	10 ²	250
(Kohima)	12 ³	136
Rest of the State	61	889
(Wokha and Phek)	68	780
Total	71	1139
	80	916

Allocation of pupils in different regions was worked out on the basis of enrolment statistics available from the State with a view to keep it a self-weighted sample. Uneven ratios obtained in different regions would disturb this balance. In Nagaland 54% of expected number of pupils from the capital city were included in the study as against 88% from the rest of the State. This tended to pull down the State mean (see Table 14.6).

According to the Fifth All India Educational Survey conducted by the NCERT in 1986, the average enrolment of Class IV in urban areas was expected to be 30 in Nagaland. It was likely to be higher in the capital city of Kohima but the obtained average number of pupils per school was only 11.3. It was slightly lower than in the rest of the State.

Another test, regarding representativeness of the sample was carried out by comparing some of the obtained statistics with those available from the Fifth All India Educational Survey conducted by the NCERT in 1986

Table 14.2

SAMPLE AS COMPARED TO THE POPULATION

Variable	Percentage ⁴	
	1986 Survey	Sample In the Study
Primary (only) Schools	87.0	36.8 ¹
Girl Students	47.4	50.7 ²
Scheduled Caste Students	0.0	12.4 ³
Scheduled Tribe Students	97.8	81.9 ⁵
Women Teachers	29.9	29.1 ⁶
Trained Teachers	44.8	35.4 ¹

The composition of samples of pupils, teachers and schools data deviated highly from the statistics as reported in the 1986 survey. The number of primary schools was much smaller than expected. It is not known whether a very large number of primary as also middle schools got upgraded or the State coordinating agency just found it convenient to administer tests in more middle and secondary schools. The percentages of primary, middle and secondary schools in the sample were 37, 34 and 30, respectively. Nagaland included the largest percentage of secondary schools in the study. The mean aggregate scores of pupils from the three different categories of schools were 58.7 (primary), 54.6 (middle), and 52.8 (secondary). In case the real representation of primary schools got reduced by introduction of a bias in the sample, it affected the State average adversely.

The percentage of girls in the sample was also high, though the difference was not very large.

The percentage of SC children was the most perplexing. It would be difficult to say that the composition of the population in the State changed so fast. Greater efforts to bring SC children to school as also the continued struggle of certain groups to get their caste status changed could be responsible for this high percentage of SC children in schools. As a consequence, near 100% of the ST group in the 1986 Survey got reduced to 81.9% only ⁷. The combined SC/ST percentage was smaller in

¹ Occasionally, data from a school got divided into two parts because of incorrect codes filled/ punched. It would not affect the pupil data.

² The number planned

³ The number retained in analyses

Source

⁴ The School Questionnaire

⁵ The Pupil Questionnaire

⁶ The Teacher Questionnaire

⁷ The State Coordinator commented "SC and ST were not distinguished very much."

the sample than in the 1986 Survey which could be due to the difference between enrolment and actual attendance. The percentage of women teachers remained the same but it was substantially lower for 'trained teachers'. Almost 50% of the teachers in the study were graduates; a larger number of them were probably untrained as well.

The Tests in the Study

The State used the tests in English. The original tests were developed in Hindi. English translations were prepared to assist the States that needed to translate them into their own languages. They were advised to use both the Hindi and the English versions while translating the tests. The three States that were using English as the medium of instruction and had to test children in English were requested to modify the translations supplied, wherever considered necessary.

Nagaland did not participate in the try-out of the tests. It also did not develop the two tests involving skills in writing.

Table 14.3

DIFFICULTY VALUES OF THE ITEMS

Pass Percentage	Arith	RC(P)	RC(S)	W.K.	A.W.
10 - 19	5	1	3	-	3
20 - 29	9	17	4	5	12
30 - 39	15	11	6	27	4
40 - 49	5	11	1	7	4
50 - 59	3	1	2	1	1
60 - 69	1				
70 - 79	1				
80 - 89	1				
Median	33.5	33.1	31.2	35.0	27.0

The tests were too difficult for Nagaland. Less than 7% items had a pass percentage equal to or higher than 49.5. The median item difficulty for four out of five tests was around 33%, with very little variation over the tests.

The Groups in the Study

The Pupils

Nagaland tested 916 pupils of Class IV, of these 49% were from rural areas and 51% were girls. The deviation of the rural group from the estimated 87% was too large to be attributed to the difference between enrolment and attendance on the one hand and the change in the demographic picture of the State on the other. It was likely that because of difficult terrain and problems related to it, the State just included more children from the urban area. The increment in the percentage of girls from the

expected 47% to 51% could also be related to this. The largest single group (82%) was that of Scheduled Tribes, followed by 12% SC pupils, the other two groups were very small. The average age of these children was 10.9 years, smaller only to that of Sikkim.

Twenty-seven per cent fathers and 42% mothers were illiterate, another 28% fathers and 30% mothers had studied only up to the primary level. Only 5% fathers and 1% mothers had gone to college. Twenty-three per cent fathers in Nagaland were either unskilled workers or unemployed, only 24% were farmers. The most perplexing figure is 27% listed as professionals or those with high-salaried jobs, when only 5% had gone to college.⁸

A large percentage of 55%, smaller only to that in Sikkim, came from families with four or more children.

More than 50% children had attended some pre-school programme, 68% said they spoke some language other than English that was the medium of instruction at school.

Seventy-three per cent children had most of the textbooks, with 3% saying that they had only a few of them. The availability of the other learning material was about the same. Seventy-three per cent received help in their homework, 67% could attend school regularly, only 1% complained that they had to miss it frequently. The families of 47.5% children expected them to help with domestic or other family-related work for two or more hours every day.

These children come from families that were interested in remaining up to date, as 52% received a newspaper and 57% received magazines at home. The percentage of families not having any books was the lowest except in Mizoram; only 37% children said they did not read anything besides their textbooks. One-third of the children watched some TV every day.

In brief, more fathers of the group from Nagaland were literate; half the children had attended some pre-school programme. Three out of four children had most of the books and other study material, and they received help with their homework. More homes received newspapers and magazines than in many other State, and quite a few children read books other than their textbooks.

The Teachers

Forty-nine per cent of the (141) teachers of Nagaland who responded to the questionnaire meant for eliciting information about them were teaching in rural areas; only 29% were women. Compared to most other States these teachers were young, 77% being less than 35 years of age, a small 1.4% were more than 50 years. Corre-

⁸ The State Coordinator explained: "It is true. Undermatriculates and matriculates join the service as LDA, UDA and by virtue of seniority and promotion many retire as Class I gazetted officers. Certificate and Diploma holders and stenographers reach very high posts."

spondingly, their teaching experience was also limited, with 47% having taught for only five years or less, only 25% teachers had been teaching for more than 10 years.

Nearly 50% of the teachers were graduates; 3% were non-matriculantes, and another 13% had studied only up to Class X. Thirty-five per cent teachers had received only one year of professional education suitable for teaching primary classes, 12% had a B.Ed. degree. Fifty per cent teachers marked the alternative 'any other', which included untrained teachers as well. The headmasters reported 65% teachers as being untrained. In-service education had been available to a moderate 38% only.

Two-thirds of these teachers lived quite close to their schools but 10% said they had to spend two or more hours to travel to and from school.

Twenty per cent teachers said they adopted some new practices in their teaching but the majority of 85% believed that such an effort would improve children's interest and achievement in school.

Nearly 28% teachers said they frequently used material other than textbooks in their teaching, 26% kept to books only. A similar percentage had never developed any audio-visual material for teaching.

Nearly two-thirds of the teachers carried out monthly evaluation of the progress made by the pupils but 8% administered tests only once a year; the rest followed the traditional practice of testing two to three times a year. Only 9% teachers said they used evaluation for diagnosing weaknesses in teaching/learning, one-third of them used it for deciding promotion only.

More than 80% teachers had their own copies of textbooks and another 13% had them from the library. With the exception of a small 3%, they all had access to a dictionary -- either they had their personal copy or it was available in the school. Eighty-eight per cent teachers said they helped weak students by paying them special attention but 12% asked parents to arrange for private tuition. Fourteen per cent teachers did not check pupils' homework regularly.

Only 44% teachers said pupils often asked questions in class. Half the teachers in Nagaland were graduates, but two-thirds of all teachers were not trained. Textbooks, etc., were available to most teachers but more of them kept to traditional practices.

The Headmasters

Of the 68 headmasters that responded to the school questionnaire, 21% were untrained but 50% had a B.Ed. degree; the rest 29% had received one or two years of professional education meant for teachers of primary

schools. As in the case of teachers, the headmasters were also quite young, only 13% were 50 years or more and 16% had taught only for five years or less. Only 41% had taught for more than 15 years; 74% had been headmasters for less than 10 years.

The Schools

Thirty-five per cent of the schools in the sample were from the urban areas, the percentage of private and private aided schools was quite high, being nearly thirty. This was the only State, where there were single-sex schools, i.e., they admitted either boys or girls only. Only 37% of the schools in the sample were primary schools; 34% were middle schools, and the rest, secondary schools with primary sections. More than 51% had pre-primary classes as well. Twenty nine per cent schools had been started in the last ten years only.

Physical facilities-wise, they did not look very deprived, 75% had a room for the headmaster and 84% a common room for the teachers. Forty-five per cent schools had the facility of drinking-water, and an equal percentage provided separate urinals for girls.⁹

'No-Detention' policy was not followed by a large 81%, another 6% did not respond to the question. They too, most probably, detained children who did not learn up to the level of expectation from grade I. Only 6% schools said they did not detain children upto Class IV. Book-Banks existed only in 19% of the schools, average number of books in the library was 510. Seventy-two percent schools had not had any impact of Operation Blackboard¹⁰ sixty-three percent schools had Parent Teacher Associations and held one or more meetings a year.

There was a high percentage of private or private aided schools in the sample. There were generally single sex schools. Physical facilities looked good. Most schools detained children who did not achieve upto the expected level right from grade I.

Achievements of Pupils

In all, data from 916 pupils were available from Nagaland. The target group was children who had studied up to Class IV of the formal school system. Nagaland was requested to administer tests to approximately 1,000 children of Class IV. All the States were also requested to test about 200 children of Class V selected from at least 10 of the selected schools. The selection of these schools was to be made by the State Coordinator, keeping broadly the representativeness of the sample of selected schools in mind. Several States chose to include one or two

9 These percentages have to be seen in the light of the large number of middle and secondary schools in the sample.

10 This is to be seen in the light of the small percentage of primary (only) schools.

pupils of Class V from a large number of schools and made the children respond to the tests as a group.¹¹ The children of Class V from Nagaland came from a large number of schools

When divided over classes on the basis of responses of the children, 41% of the sample was found to be from Class V. This group scored lower averages on each of the five tests, a situation that was difficult to explain. The picture, however, had recurred frequently in other States as well. It was difficult to understand why children studying in Class V achieved lower than those studying in Class IV. One could, perhaps, explain it in a test of arithmetic, where tasks learnt not too well during an earlier period could be forgotten, but why should it happen in tests of language which did not use material from textbooks?

Table 14.4

MEAN ACHIEVEMENTS OF PUPILS — CLASSES IV AND V

Class	Arith	RC(P)	RC(S)	W K	A W	Total
IV (538)	14.8	15.1	5.1	15.0	7.8	57.8
V (378)	13.6	14.4	5.0	14.0	6.3	53.3

As the percentage of children from Class V was very high and the State did not specify the numbers tested for each class group, the data were merged for further analyses. The achievement of the total group was taken as that of pupils of Class IV while making comparisons with other States. It gave a small disadvantage to the State.

Table 14.5

ACHIEVEMENTS OF PUPILS

Tests	Arith (40) ¹²	RC(P) (44)	RC(S) (16)	W K. (40)	A W. (24)	Total (164)
Mean (N-916)	14.3	14.8	5.1	14.6	7.2	56.0
SD	5.4	6.0	2.8	8.5	3.5	
Mean as percentage	35.8	33.6	31.9	36.5	30.0	34.1
KR-20	.74	.76	.61	.90	.63	
All India Median (as percentage)	41.2	45.4	43.1	49.5	41.7	45.2 ¹³

The achievement in Nagaland was very poor. With the exception of the test on Word Knowledge, reliability coefficients were also low.

Each State was divided into smaller regions as a first step towards drawing a sample of schools. It was be-

lieved that such a step would ensure a proper representation of all parts of the State as also provide useful data with respect to regional differences, if any. The capital city of each State was included as region I; Nagaland was not split except as the capital city and the rest of the State.

Table 14.6

ACHIEVEMENTS OF PUPILS — REGION-WISE

Region		Arith.	RC(P)	RC(S)	W K	A W	Total
Capital City(136)	Mean	14.2	14.7	5.3	16.3	8.6	59.1
	SD	4.5	5.3	2.5	8.3	4.0	
Rest of Nagaland (779)	Mean	14.3	14.9	5.1	14.3	7.0	55.6
	SD	5.6	6.2	2.8	8.5	3.3	

There was little difference in three out of five tests but on the last two children in the capital city achieved higher than the rest of the State. The learning of content in both the tests, particularly the one on Word Knowledge, would be affected by greater exposure to communications — interpersonal or one-sided from a variety of media. Children in the capital city were more likely to be exposed to media and situations for human interaction than in the rest of the State.

A higher achievement of boys on the test of Word Knowledge was noticed in several States; the influence of higher exposure of boys to the stimuli mentioned above has been advanced as one of the possible reasons.

On two of the tests, namely, Arithmetic and Reading Comprehension, the achievements of pupils were also studied objective-wise, and in case of Arithmetic, topic wise too.

Table 14.7

ACHIEVEMENT IN ARITHMETIC — OBJECTIVE-WISE

Objective	Mean	SD	Mean as Percentage
Knowledge (19) ¹⁴	7.5	2.9	39.5
Understanding (12)	4.2	2.0	35.0
Application (9)	2.6	1.6	28.9
Total (40)	14.3	5.4	35.8

The decreasing percentages of mean scores on items classified under these three objectives were in the expected direction. 'Application' can be expected only after reasonable mastery of knowledge.

¹¹ This procedure, in fact, was more efficient.

¹² The maximum possible score.

¹³ For all the seven tests Nagaland did not administer tests on sentence structure and spelling.

¹⁴ The maximum possible score.

Table 14.8

ACHIEVEMENT IN ARITHMETIC — TOPIC-WISE

Topic	Mean	SD	Mean as Percentage
Time (3)	1.1	9	36.7
Factors and Multiples (7)	2.3	1.4	32.8
Fundamental Operations (12)	4.0	2.1	33.3
Weights and Measures (3)	8	8	26.7
Fractions (5)	1.6	1.0	32.0
Decimals (7)	3.1	1.4	44.3
Unitary method and Others (3)	1.4	1.0	46.7
Total (40)	14.3	5.4	35.8

Compared to the overall mean, the scores were high on Unitary Method and Decimals. A higher average score on the former had been noticed in nearly all the States. It is likely that the items under this group were very easy. These were very much like the ones given in books and practised by pupils. A high score on Decimals could be due to 'recency' of introduction of the topic. A low average on Weights and Measures, an area close to the everyday experiences of the children, was not understood. A 33% score on Fundamental Operations presented a dismal picture of levels of learning.

Table 14.9

ACHIEVEMENT IN READING COMPREHENSION OBJECTIVE-WISE

Objective	Mean	SD	Mean as Percentage
Noting Detail (17)	6.7	3.1	39.4
Simple Comprehension ¹⁵ (13)	4.3	2.3	33.1
Inference ¹⁶ (14)	3.8	2.0	27.1
Total (44)	14.8	6.8	33.6

The decreasing means over the three objectives were in the expected direction, the young student was still learning to draw inferences. While 39% mean for receiving simple information in a language that is not the mother tongue of the children was not considered very low in itself, its use as the medium of instruction would impede the learning of other subjects as well.

The achievements of children were also studied as divided over location, gender and caste. The findings are summarised in Tables 14.10 to 14.12.

Compared to 85% of the total enrolment being in rural areas in 1986 as observed in the Fifth All India Educational Survey, the present sample was more or less evenly divided over location, the urban group was a high of 48.6%. Leaving room for expected demographic

changes, the sample seemed biased in favour of the urban areas and it reduced the already low State average considerably. The rural group scored higher than the urban children in all the five tests that the State administered; all differences were statistically significant. The two aggregates were 59.9 and 51.8,¹⁷ respectively.

Table 14.10

DIFFERENCES IN ACHIEVEMENT - LOCATION-WISE

Test	Location	Mean	SD	t
Arith	U	13.0	4.4	6.99*
	R	15.5	6.0	
RC(P)	U	14.0	6.0	4.21
	R	15.6	5.9	
RC(S)	U	4.8	2.5	3.64*
	R	5.4	2.9	
W K	U	13.2	8.3	4.85
	R	15.9	8.4	
A W	U	6.8	3.3	2.87*
	R	7.5	3.6	
RC (total)	U	18.7	7.5	4.63*
	R	21.1	7.7	

Urban - 445 Rural - 471

* $p < .01$

In some States a proportion of urban children, particularly in the big cities, go to private fee-charging English-medium schools. In Nagaland, the medium of instruction was English in all the schools but the faith in the quality of education in high-fee-charging private schools might still have taken away the children belonging to the high socio-educational economic groups. This could affect the mean achievement of the remaining children from urban area.

Table 14.11

DIFFERENCES IN ACHIEVEMENT — GENDER-WISE

Test	Gender	Mean	SD	t
Arith	B	14.2	5.2	7.2
	G	14.4	5.7	
RC(P)	B	14.3	5.8	2.47
	G	15.3	6.2	
RC(S)	B	4.9	2.7	1.61
	G	5.2	2.8	
W K	B	15.4	8.2	2.82
	G	13.8	8.7	
A.W	B	7.3	3.4	6.4
	G	7.1	3.5	
RC (total)	B	19.3	7.5	2.52
	G	20.6	7.8	

Boys - 452 Girls - 464

$p < .05$ $p < .01$

¹⁵ This includes: (a) deriving meaning of difficult words from the context, and (b) relating things at a simple level.

¹⁶ This includes identifying the message or the central idea, and the title of the write-up.

¹⁷ The maximum score in Nagaland was 164 only.

In contrast to the urban-rural divide, there were no differences among boys and girls. The two statistically significant differences were evenly distributed, one each in favour of boys and girls. Incidentally, a higher score of boys on Word Knowledge was observed in several other States as well. This could be related to the generally higher social interaction available to the boys.

Table 14.12

DIFFERENCES IN ACHIEVEMENT -- CASTE-WISE

Test	Group	Mean	SD	F
Arith	SC	13.8	5.1	2.02
	ST	11.1	5.5	
	BC	11.6	1.1	
	Others	11.1	1.3	
RC (P)	SC	15.6	6.6	2.07
	ST	11.8	5.9	
	BC	12.2	5.7	
	Others	15.7	6.5	
RC (S)	SC	5.0	3.0	1.32
	ST	5.1	2.8	
	BC	1.0	2.3	
	Others	5.5	2.3	
WK	SC	11.1	8.4	1.69
	ST	11.8	8.4	
	BC	12.8	8.5	
	Others	11.7	9.4	
AW	SC	6.6	3.3	1.10
	ST	7.3	3.5	
	BC	7.0	4.1	
	Others	7.3	3.0	
RC (total)	SC	20.6	8.4	2.14
	ST	20.0	7.5	
	BC	16.2	7.0	
	Others	21.2	7.8	

SC - 114 ST - 750 BC - 20 Others - 32

In reality, the sample comprised only two groups, namely, SC (12%) and ST (82%), the other two groups were a mere 2% and 3.5%. Except for the smallest group of 2% BCs, the three others achieved nearly equal scores. The three aggregates varied between 33.1 to 34.4 only. The BC group had an average of 29.0. As the latter was very small, it was safer to conclude that there were no differences on the basis of caste divisions.

Factors related to Pupil Achievement

Pupil and home-background-related variables were regressed against scores on Arithmetic and Reading Comprehension separately with a view to understand their contribution to differences in achievement. Before this analysis, home-related variables were combined in three

composite scores in a manner that would maximise their relationship with the criterion variables.

The regression coefficients of the final equations are given below.

Home Background

	RC	Arith
Location	2.62	2.20 [*]
Father's Occupation	-.20	-.09
Caste	-.58	-.09
Father's Education	1.04 [*]	-.04
Mother's Education	-.65	-.35
Number of Siblings	.10	.51 [*]
R	.22	.25

$p < .05$ $p < .01$

'Location' alone had consistently significant regression coefficients for both the equations. Persistent higher achievement of rural children was noticed in Table 14.10. What could be the reasons for rural children achieving higher than the urban children in a State where the medium of instruction was English?¹⁸ One would expect higher exposure of urban children to the English language. Children of the higher socio-economic group in the capital could be attending private schools.¹⁹ If the group of children in a particular village spoke a common language, the teachers could be using the same, at least partially, for teaching. It must be mentioned though that the achievements of children from rural areas were higher even in the test of language, namely, English.

Parents' education contributed towards differences in achievement in language only. Opposite signs for regression coefficients for father's and mother's education, respectively, were difficult to understand. The R's were moderate.

Facilities for Learning

	RC	Arith
Attended Pre-school	1.03 [*]	-.65
Place for Study	1.68 ^{**}	1.25 [*]
Help in Homework	-.08	-.20
Availability of Textbooks	.44	.26
Availability of Study material	-.10	.02
Helping Household	-.58	-.10
Regularity in Attendance	.76	-.27
R	.14	.13

^{*} $p < .05$ ^{**} $p < .01$

The only variable to have a significant regression coefficient with respect to both the criteria was 'Place for

¹⁸ There were nearly 30% private/private aided schools in the sample.

¹⁹ The State Coordinator later explained: 'During administration of the tests, questions only were translated into local dialect in rural area, whereas such thing did not take place in multilingual urban area.' This change in the procedure of test administration puts a question mark to the findings in the State.

study'. In the absence of support from any other variable this was difficult to interpret. It could reflect the economic status of the family. The two R^2 's were quite small.

Educational Environment at Home

	RC	$Arith$
Get Newspapers -	1.56	-1.49
Get Magazines	- .23	-.09
Books at Home	.50	-.20
Read Books	.09	-.32
R	.11	.17

- $p < .01$

More than 50% families got newspapers as well as magazines, the regression coefficients for one of these were statistically significant. Directions of all the values were the same. It is likely that the effect of one got subsumed in the other. Negative signs were difficult to comprehend. Although a large number of children reported reading something other than textbooks, it did not seem to have much impact on their achievement in school work.

These three variables, along with five others, were regressed with achievement in Reading Comprehension and Arithmetic, separately, their contributions to R^2 are given below.

Table 14.13(a)

CONTRIBUTION OF PUPIL - RELATED VARIABLES
TO ACHIEVEMENT IN READING COMPREHENSION

Variable	R	R^2	Increment in R^2	F	p
Home Background	.2218	.0492	.0492	47.30*	.22
Word Knowledge	.2515	.0632	.0140	13.68*	.12
Similar Language	.2763	.0763	.0131	12.96*	.11
Gender	.2883	.0831	.0068	19.74*	.13
Facilities for Learning	.2965	.0879	.0048	4.81*	.13
Age	.2992	.0895	.0016	1.60	-.01
Time Watch TV	.3005	.0903	.0008	0.76	.03
Educational Environ	.3005	.0903	.0000	-	.09

$p < .05$ * $p < .01$

Unlike most other States, Word Knowledge did not take the topmost position in the regression analysis for both the criteria. The scores on Word Knowledge were treated as substitutes for that of a test of ability. It tended to explain substantial variance both in absolute terms as well as proportionate to explained R^2 . It retained its position with respect to Arithmetic and contributed 42% of the total variance explained, which in itself happened to be low. With respect to Reading Comprehension, it contributed only 15% of the total explained variance.

'Home background', 'Similarity of Language' spoken at home with the medium of instruction at school (English, in this case) and 'Facilities for Learning' turned out to be the important variables related to differences in pupil achievement. While apparently 'gender' did not seem to make any difference (see Table 14), it did make a significant contribution to R^2 for Reading Comprehension. So did 'Watching TV' to Arithmetic, it also had a significant negative t with achievement in Arithmetic (-.16²⁰).

Table 14.13 (b)

CONTRIBUTION OF PUPIL - RELATED VARIABLES
TO ACHIEVEMENT IN ARITHMETIC

Variable	R	R^2	Increment in R^2	F	p
Word Knowledge	.1928	.0372	.0372	35.30	.23
Similar Language	.2432	.0591	.0220	21.30	.23
Home Background	.2825	.0798	.0207	20.47	.16
Time Watch TV	.2009	.0816	.0018	4.79*	-.16
Facilities for Learning	.2961	.0879	.0033	3.26	.10
Educational Environ	.2976	.0886	.0007	0.69	.10
Gender	.2986	.0892	.0006	-	.10
Age	.2987	.0892	.0001	-	.05

$p < .05$ * $p < .01$

'Age' and 'Educational Environment at Home' did not contribute to R^2 in relation to either of the two criteria.

These findings have to be seen in light of the fact that teaching in the primary schools of Nagaland was being conducted through the medium of English. Only 32% children said they spoke English at home; for the rest of them having books or magazines at home probably did not make much difference. If the same were in a language other than English, the children would in all probability not be able to read that language. If these were in English, it is still doubtful whether they could read with some facility after only four years of schooling in a language that was not their mother tongue.

The total variance explained by pupil-related variables in Nagaland was very small, when compared with other States. The picture was somewhat similar in two other States where the medium of instruction was English.

In Tables 14.13 (a) and 14.13 (b), the impact of pupil-related variables, both individual and those associated with home background, were studied. The percentage of variance accounted for in these tables remained very low—only 9% in relation to either criterion. It was likely that some of the home variables were less effective as the teaching in schools was being carried out in a

20 This picture had been noticed in some other States as well.

language other than the mother-tongue of a large number of pupils. In a situation like this, the conditions prevalent in schools could become very much more important, which in turn would influence the average achievement of the pupils of the school.

All the school-related variables on which data were collected on this study, excluding those providing information about teachers, were regressed with pupils' achievement.

The school means differed from each other to a smaller extent, as was expected, than the scores of the pupils. In the test in arithmetic, the standard deviation obtained for 49 school means²¹ 3.1 as against 5.4 for the scores of 916 pupils. Both the values were much lower than the respective medians of 6.4 and 7.9. The ratio between the standard deviations of school means and that of the scores obtained by the pupils was one of the lowest in all the States.

Table 14.14 (a)

CONTRIBUTION OF SCHOOL-RELATED VARIABLES' ACHIEVEMENT
TO READING COMPREHENSION

Variable	R	R ²	Increment in R ² —	F	t
Percentage Attendance	4075	1661	1661	7.37*	41
Room for the Headmaster	5814	3380	1720	9.35*	-39
Rooms per Class Group	6428	4132	0752	4.49*	-33
No Detention Policy	6691	4477	0345	2.12	05
Years of Existence	6920	4789	0312	1.97	13

p < 05 p < 01

The total R²s were very high — 80% for Reading Comprehension and 89% for Arithmetic. A large number of variables made small contributions to render the cumulative R² very high.

It was hypothesised that the contribution to R² with respect to pupil-related and school-related variables would tend to be complementary, i.e., low values of R² in one set would get compensated by the high values of the same in the other set of tables. It turned out to be so to a very large extent in Nagaland. The schools did differ quite a bit from each other in the State. Thirty per cent of the schools were private, all schools admitted either boys or girls only. Thirty-seven per cent had primary classes only, 34% were middle schools, and the rest

secondary schools. More than 51% had pre-primary classes as well. The interaction of the apparent differences might be getting reflected in differences in pupil achievement. School-related variables were expected to play a larger role in differences in achievement of pupils in arithmetic, it was so, to some extent, in Nagaland.

Table 14.14(b)

CONTRIBUTION OF SCHOOL-RELATED VARIABLES
TO ACHIEVEMENT IN ARITHMETIC

Variable	R	R ²	Increment in R ²	F	t
Percentage Attendance	5646	3187	3187	17.31*	57
Room for the Headmaster	.7525	.5663	.2476	20.55	-46
Proportion SC/ST	.8057	.6491	.0828	18.26*	18
Years of Existence	.8228	.6771	.0280	2.94	19
PTA	.8354	.6979	.0208	3.05	22
Professional Training of Headmaster	.8498	.7221	.0243	2.79	31

* p < 01

In spite of the high values of cumulative R², only two variables, namely 'Percentage Attendance' and 'Separate Room for the Headmaster', made consistently significant contributions to R². 'Percentage Attendance' could reflect the general environment of the school as well as the differences in the community groups the schools were serving. More motivated parents may ensure better attendance of their children. 'Separate Room for the Headmaster', could be associated with the physical facilities the school had in general. A school being primary, middle or secondary, could also affect this status but this obviously was not the case as it was explicitly included as an independent variable. It could reflect the influence of a combination of variables where availability of amenities, including space and money, play a part. The negative sign of 't's made the situation more difficult to comprehend.

The availability of a room per class group also made a significant contribution to R² with relation to Reading Comprehension, but it too had a negative 't'.

Difficult-to-explain relationships and a very high percentage of between-school variance getting associated with school variables point to the need for revalidation of findings.

²¹The number of schools entered in regression analysis for differences between schools got reduced as the identification codes on some SQS did not match with those given by the pupils.

Table 14-B

INTER CORRELATIONS OF SCHOOL-RELATED VARIABLES AND ACHIEVEMENT

1	100	.44	.36	.18	-.06	-.17	-.30	.12	.18	-.29	-.17	.10	-.08	-.01	.06	.04	-.17	-.18	.08	-.08	-.14	-.05	.11	-.11	.10	-.35	-.45	-.09	-.09	.08	.31	.15	.16	.10	.19	-	-.17	.17
2	100	.69	.50	.07	-.44	-.33	.31	.34	-.21	-.27	.22	.05	-.17	.06	.17	-.33	-.14	.06	-.15	-.20	.10	-.01	-.38	.00	-.31	-.27	-.18	-.05	-.02	.24	.15	-.03	.07	.16	-	-.21	.11	
3	100	.54	-.03	-.28	-.23	.23	.49	-.28	-.03	.13	-.09	-.05	-.03	-.06	-.36	-.23	-.04	.05	-.04	.10	-.04	-.31	.13	-.02	-.03	-.07	.06	-.12	.30	.20	.14	.04	.29	-	-.24	.20		
4	100	.13	-.02	-.30	-.01	.17	-.01	-.02	.15	.19	.16	.04	.03	-.06	.19	.15	.06	.12	-.04	.03	-.19	.03	-.11	-.25	-.11	-.13	-.10	-.06	.15	.11	-.13	.17	-	-.17	.15			
5	100	-.26	-.23	.14	-.07	-.06	-.20	.23	.06	-.17	-.16	-.13	.09	-.00	.07	.14	.01	.18	-.04	-.20	.14	.06	.02	-.05	.07	.09	.17	-.11	-.02	.27	.18	-	.12	-.09				
6	100	-	.41	-.53	-.20	.14	.21	.08	-.16	.33	.36	-.04	.34	.14	.18	.22	.45	-.05	-.02	.52	-.09	.36	.26	-.05	.00	-.03	-.20	-.19	-.10	-.17	-.09	-	.16	-.18				
7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
8	100	-.18	-.08	-.21	-.14	-.14	-.10	-.03	.07	-.06	.15	.34	.27	.15	.21	-.14	.06	.40	-.20	.50	.58	.29	.22	.22	-.15	-.20	-.14	.08	-.05	-	.11	-.20						
9	100	.25	-.10	-.08	-.17	.16	-.47	-.03	.27	.56	-.27	-.32	-.35	-.47	-.02	-.10	-.35	.14	-.07	-.07	.02	-.09	.09	.45	.28	.11	.21	.16	-	-.03	.26							
10	100	-.26	-.01	-.04	.07	-.07	-.14	.03	-.44	-.09	-.16	.17	-.18	-.18	-.05	-.14	.16	.11	.12	.13	-.09	-.21	.19	.19	-.09	-.11	.23	-	-.01	.13								
11	100	.71	-.16	.15	.17	-.11	-.14	-.18	-.04	.04	-.21	.07	-.02	.06	-.13	-.24	-.08	-.03	-.20	-.15	-.08	-.12	.13	-.23	-.27	-.16	-	-.03	.04									
12	100	-.27	-.05	.20	-.04	-.25	-.22	-.21	-.12	.03	-.05	.01	.07	-.08	-.05	.03	.10	-.05	-.18	-.04	-.03	.19	-.13	-.39	-.08	-	-.02	.12										
13	100	-.02	-.14	.25	-.02	.30	-.04	.10	.15	.11	.23	-.02	-.05	.10	.02	.03	-.37	-.11	-.07	-.18	-.08	.05	.33	.21	-	.04	-.05											
14	100	.03	-.01	.36	-.03	-.09	-.09	-.30	-.13	-.26	.02	-.29	-.14	-.08	-.19	.32	-.16	-.18	-.20	.03	-.26	-.03	-.14	-	-.14	-.05												
15	100	.17	-.28	.09	.02	.18	.18	.15	-.13	.22	.16	-.19	.12	-.07	.20	-.01	-.25	-.32	-.04	.04	-.18	.05	-	-.22	-.02													
16	100	.45	.14	-.28	-.12	.17	-.03	.00	-.17	.18	-.08	-.09	-.09	-.14	.03	.13	.02	-.19	-.06	.06	-.07	-	-.02	-.17														
17	100	.09	-.03	-.06	-.22	-.08	-.31	-.29	.10	-.03	-.11	-.14	-.00	.13	.02	-.10	-.30	-.31	-.03	-.35	-	-.06	-.33															
18	100	.37	.22	.23	.27	.09	-.09	.35	.07	.05	.01	-.13	-.02	.10	-.46	-.42	-.16	-.11	-.30	-	.09	-.39																
19	100	.57	.28	.14	-.19	.03	.32	-.12	.24	.16	.06	-.09	.15	-.31	-.17	-.09	.25	.02	-	-.08	-.16																	
20	100	.26	.39	-.18	.18	-.04	-.06	.02	.03	.02	-.03	-.05	-.14	-.03	-.00	.17	.06	-	-.02	.03																		
21	100	.15	.01	-.04	.10	-.06	.03	.20	-.15	-.16	-.06	-.15	-.08	.18	.02	.19	-	-.01	-.01																			
22	100	-.08	.15	.05	-.06	.09	.08	-.05	.07	-.09	-.15	-.21	-.12	.02	-.06	-	-.06	-.21																				
23	100	.40	.02	.38	-.29	.11	-.24	-.02	.35	.21	.07	-.01	-.06	-.03	-	.01	.05																					
24	100	.10	.00	-.21	-.01	.18	-.27	.50	.06	.11	-.04	-.05	-.03	-	-.21	.08																						
25	100	-.09	.36	.29	-.00	.06	.45	-.28	-.30	-.17	-.16	-.23	-	.06	-.29																							
26	100	.04	.02	.06	.12	-.04	.57	.42	.24	.12	.39	-	-.02	.41																								
27	100	.73	.27	.19	.05	.06	-.04	.07	.09	.29	-	.22	-.01																									
28	100	.06	.26	.22	.10	.01	-.08	.14	-	.29	.01																											
29	100	-.01	.01	-.08	-.01	-.01	.03	.08	-	-.08	-.01																											
30	100	-.20	.22	.05	.07	.15	.09	-	.10	.06																												
31	100	.02	-.18	-.13	-.03	-.20	-	-.05	-.18																													
32	100	.59	.43	.45	.61	-	-.03	.60																														
33	100	.61	.06	.63	-	-.04	.10																															
34	100	.21	.61	-	.16	.77																																
35	100	.46	-	.36	.11																																	
36	100	-	.19	.68																																		
37	100	-	-	-																																		
38	100	.01	-	-																																		
39	100	-	-	-																																		

Orissa

Orissa was expected to administer tests to approximately 4,200 pupils who were to be selected from 278 schools. The sample was proportionately distributed over the four regions including the capital city. The State returned data from 3,010 pupils drawn from 308 schools. The number of schools in most States was expected to increase because of the large difference between enrolment as available from the Fifth All India Survey which was used to estimate the number of schools and the actual attendance of the pupils in general and their presence on a particular day i.e. the day(s) on which the tests were administered. However, the State did not stick to the schools in the list(s) and replaced several of them.

Table 15.1

SAMPLES PLANNED AND ENTERED IN ANALYSES

<i>S N Region</i>	<i>No. of Schools</i>		<i>No. of Pupils</i>	
Capital City	10 ¹	16 ²	250	186
Central Revenue Region	69	76	1017	831
Southern Revenue Region	139	132	1987	1221
Northern Revenue Region	60	84	936	772
Total	278	308	4190	3010

It may be recalled that the actual selection of sample of schools was carried out in Delhi after getting the relevant data from the States. A list of the selected schools was sent to the State with a request that these be adhered to strictly. An additional list was provided for each region to enable data from more schools to be collected in case the number of pupils fell short of the figure expected. Most States kept to the lists but Orissa replaced a large number of schools; the impact of this action, if any, would be seen in Table 15.2.

With regard to the numbers, 95% as many schools as expected were approached for data but only 72% of the

pupil sample was obtained. As Orissa joined the study late, it was not, probably, possible to visit more schools.

Data were collected from a larger number of schools in the capital city but the pupil proportion with respect to the number expected was only 74%. It was totally contrary to expectation as most big cities suffer from the malady of large enrolment in classes. The shortfall was maximum in the Southern region. More schools were approached in the Northern Revenue region, to reduce the short fall in the sample of pupils.

The comments above are relevant only to the sample executed. The sample of schools and pupils, the data for which were analysed were further curtailed due to errors in recording, persistent non-response by pupils, non-availability of School Questionnaire etc. For this reason, sample size also differed from one major step of organisation or analysis of data to another. Numbers are given along with the data.

To judge the representativeness of the sample, a few statistics obtained from the data were seen against the corresponding figures as available from the Fifth All India Educational Survey, conducted by NCERT in 1986.

Table 15.2

SAMPLE AS COMPARED TO THE POPULATION

<i>Variable Percentage</i>	<i>1986 Survey</i>	<i>Sample in the Study</i>
Primary (only) Schools	89.9	84.6 ¹
Girl Students	42.1	38.8 ¹
Scheduled Caste Students	17.3	20.6 ¹
Scheduled Tribe Students	18.5	29.3 ¹
Women Teachers	15.7	37.9 ⁵
Trained Teachers	87.7	88.3 ¹

Each of the sample statistics deviated from the 1986 figure to some extent but the difference in most cases was in the expected direction. A lower proportion of primary schools would be due to upgrading of some primary schools to middle schools. Similarly, increase in percentage of SC and ST pupils could reflect the impact

1 The number planned.

2 The number obtained.

Source

3 The School Questionnaire

4 The Pupil Questionnaire

5 The Teacher Questionnaire

of the policies of the State and the central governments. The decrease in percentage of girls could be because of more absenteeism on the part of the girls as the statistics in the table is based on the responses of the pupils who responded to the tests and not enrolment. Nearly all schools in Orissa were co-educational, therefore the possibility of a bias in including more schools for boys only did not exist. Percentage of women teachers was more than double of that reported in 1986 survey. Intensive drive to recruit more women teachers in primary schools during the last five years could be the reason behind it⁶. But an alternative reason, namely, easy to persuade women respondents, would be a source of bias in the replies on Teacher Questionnaire.

Percentage of trained teachers was marginally higher than the one reported in the Survey, the difference was in the expected direction. Overall, the sample seemed fairly representative of the population. The only variable on which it deviated significantly was percentage of women teachers.

The Tests in Orissa

Orissa decided to participate in the Study at a later date and thus lost the opportunity of contributing to the items and more particularly, participation in try-out of the pool of items. The States that participated in the try-out had the advantage of improving upon their own translations as also influencing the final selection of items.

Most of the tests in the battery have proved to be of reasonable difficulty for the pupils in Orissa, 38% of the items had pass percentage of 50 and above.

Table 15.3

DIFFICULTY VALUES OF THE ITEMS

Pass Percentage	Arith.	RC(P)	RC(S)	W K	A W	S S	Spell
10 - 19	1	2	1		3		
20 - 29	9	7	3		3	1	4
30 - 39	13	12	2		6	2	10
40 - 49	7	10	6	12	2	5	8
50 - 59	2	7	2	23	8	5	1
60 - 69	4	5	1	3	1	3	2
70 - 79	2	1	1	2	-	2	
80 - 89	2				1		
Median	37.2	40.5	46.2	53.0	39.5	51.5	38.0

Three tests, Arithmetic, Spellings and Appropriate Word proved a bit difficult in Orissa. The tests in arithmetic and spellings were found to be difficult in several States. Correctness of spellings is probably not emphasised very much at this stage. The choice of Appropriate Word

(in writing) had also proved difficult in several States. The State did well on Word Knowledge, but it may be remembered that the difficulty level of a test involving out of context words could vary from one language to another. The test involving structure of a sentence was prepared by the State itself but so was the test on spellings.

On the average, the Discrimination Indices for the test items were on the lower side, the median values being 43.6, 45.9, 56.2, 44.5, 42.0, 59.5 and 50.6 respectively for the tests. The reliability coefficients too were on the lower side, when compared with values obtained in the other States.

The Groups in the Study

The Pupils

Data available from 24 pupils was dropped for one reason or the other, the following remarks are based on responses of 2,986 pupils who had studied up to class IV in the formal school system. Seventy-five per cent of the pupils were from rural area, 39% were girls. Twenty per cent of all pupils were SC, 19% ST, only 5% said they belonged to Backward Classes and the rest 55% were categorised as 'Others'. Average age of the pupils was 9.7 years.

Only 41% of the fathers of the group were farmers, 21% reported professions, higher level salaried jobs or business as their fathers' occupation. Seven per cent were unskilled workers with another 13% as skilled workers. As regards education, 54% of the fathers and 80% of the mothers were either illiterate or had studied only upto primary level. Only 10% of the fathers had received college/university level education, rest of the 36% had studied upto various levels of secondary schools. In comparison, only 2% of the mothers had attended college.

Percentage of students from small families of one or two children was a moderate 17.5 with another 49% from families of medium size.

Thirty per cent of the students had attended some kind of pre-school⁷. A large percentage (39%) reported that language spoken by them was different from the one being used as the medium of instruction at school i.e. Oriya. Eighty three per cent had most of the textbooks but only 59% said they could get sufficient amount of other study material, 4% had few books and 17.5% few notebooks/slates etc. Nineteen per cent of the children helped the families for 2 or more hours every day.

More than half of the children received some help in

⁶ This has since been confirmed by the State Coordinator.

⁷ Eighty-eight per cent schools reported they did not have pre-primary classes. Some of these children could have gone to independent nursery schools or to Anganwadis.

than studies from the family, twenty per cent had a place where they could sit and study. Nearly 70% attended school fairly regularly, less than 2% said they had to miss it quite often. Percentage of homes (of this group) getting newspapers and magazines were 18 and 21 respectively. More than half of them had no books other than textbooks at home, with only 10% families having reporting more than 20 books. But 48% of the children read some books other than the textbooks. A very large percentage (73) did not watch any television, only 11% watched TV for 1 or more hours a day.

The group from Orissa had a balance of supportive and not so helpful inputs in the home background and the outside environment that would facilitate learning. A large proportion of parents were not educated, language spoken at home was different from Oriya for a substantial percentage. On the other hand, a fair proportion of fathers were professionals, and many children read books other than their textbooks.

The Teachers

Following observations are based on the responses of 279 teachers on the Questionnaire prepared for this purpose. Seventy-two per cent teachers were from rural schools, 38% were women. The statistics deviated highly from near 16% in the Fifth Survey, the difference has been commented upon earlier. More than 50% of the teachers were quite young i.e. less than 35 years of age which could be seen as an indicator of fast expansion of primary school facilities in the recent past. Seven per cent schools had reported being in existence for less than 10 years.

A substantial percentage of teachers (17%) in primary schools in Orissa had not studied even upto matriculation; in contrast 23% were graduates. The rest 60% had studied up to secondary or senior secondary level. Only 54% had received 2 years of professional education addressed to teaching at the primary level. Seventeen per cent reported having a B.Ed. degree which trains teachers for teaching in middle or secondary schools. The percentage of untrained teachers was 11.7 which was slightly less than the one reported in the Fifth Survey. Only 39.5% had received any inservice education, this may be seen in light of the fact that 31.5% reported teaching experience of less than 5 years. However, it could not be said that most of them were fresh from training schools as the time gap between passing out of the training schools and finding a placement in school system is known to be fairly large.

Most of the primary school teachers resided close to their schools as 61% reported spending less than 1/2 to one hour for this purpose. A small percentage (4 only) spent more than 2 hours travelling to and from their schools.

A fairly high percentage of teachers (58) did not have their own copies of the textbooks. Of these 35% reported borrowing them from pupils in the class, probably at the time of teaching.

Fourteen per cent had no access to a dictionary but 35% reported having their own copy.

On teaching practices, only 9% teachers said they had experimented with new methods. Most teachers used material other than the textbooks for teaching, 78% of them had developed some audio-visual aids themselves, 67% had even involved their students in this activity. Nine per cent of the teachers passed on the responsibility of helping weak students to the parents by asking them to arrange tuition.

Thirty per cent teachers carried out monthly evaluations and majority of 68% evaluated pupils 2-3 times during the year but 2% teachers said that they undertook evaluation only once a year. A fairly large proportion (56.3%) reported using results of evaluation for improving learning and teaching in addition to the traditional use of promoting pupils, only a small 4% used it towards one purpose only.

Regarding the academic background of the teachers in Orissa, with 15% untrained, 17% having a B.Ed. degree, 60% never having had any in-service education, the group as a whole was not the best prepared for the task. A much higher percentage, as compared with the other States were also relatively new to the job.

The Headmasters

Data were available from two hundred and seventy-nine School Questionnaires. Sixteen per cent of the head teachers were quite young being less than 35 years of age. Less than 5 years of teaching experience, including the period during which a teacher was headmaster was reported by 12%, 44% had been headmasters for less than 5 years. Seven per cent headmasters had not received any professional training, another 20% had a B.Ed. or M.Ed. degree.⁸ This, of course, should be seen in light of the fact that 15% schools in the sample were middle schools, having classes I to VIII. Fifty-nine percent had gone through two years of professional education after completing senior secondary school and another 13% only one year of professional training.

⁸ This implies a higher-level general education even if the professional education is addressed to the secondary level.

The Schools

Rural schools comprise 77% of the sample. Most of the schools, 91%, were being managed by the States government with another 6% by local bodies. Percentage of private aided and totally private schools was less than 3. Nearly all schools were co-educational. Only 7% of the schools had been started in the last ten years, 77% had been there for more than 20 years. Eighty five per cent had classes I to V only, there were no schools in the sample which had secondary classes.

With regard to the physical facilities, nearly 30% schools had a room for the headmaster but only 5% reported having a staff-room for the teachers. Facility of drinking water in the school premises existed in a moderate 35% and urinals for girls were available in barely 11% of the schools.

Only 12% schools had pre-primary classes. The picture regarding 'No Detention Policy' was rather a mixed one. A majority of 48% followed it upto grade II but approximately one-eighth of the schools stretched it to Classes III and IV (each). On the other hand 21% schools reported that they detained pupils, if necessary from grade one itself, another 5% did not detain pupils in grade I but did so from grade II onwards. With a very large percentage of schools being run by the government, this flexibility probably represented the reality and not the policy. 'Operation-Blackboard' had not been implemented in 57% of the schools but 25% schools had Book-Banks. Forty five per cent of the schools reported that they did not have a Parent Teacher Association.

Achievements of Pupils

The data from 2,986 pupils have been presented in the following tables.

Table 15.4

ACHIEVEMENTS OF PUPILS

Test	Arith (40) ⁹	RC(P) (44)	RC(S) (16)	WK (40)	A W (24)	S.S. (18)	Spell (25)	Total (207)
Mean	17.0	18.9	6.9	21.4	10.1	9.4	9.8	93.5
SD	6.9	7.9	3.3	7.5	4.1	4.1	5.1	
Score as Percentage	42.5	42.9	43.1	53.5	42.1	52.2	39.2	45.2
KR-20	84	86	72	85	73	79	81	
All India Median as Percentage	41.2	45.4	43.1	49.5	41.7	57.8 ¹⁰	42.8 ¹¹	45.2

With the exception of the test in spellings, all averages were higher than 40% with two of them being more

than 50%. Going by the general expectation in the schools, it could be considered as acceptable. It also compared quite favourably with other States. Achievement in the test on spellings was lower, as compared to the other tests. It, probably reflected the delayed emphasis on this aspect of learning of language, the trend was noticed in other States as well.

A small sample of 471 pupils of Class V selected from the schools in the sample were also administered the test battery. The purpose was to study 'gain' in one academic year. The mean scores are given in Table 15.5.

Table 15.5

MEAN ACHIEVEMENTS OF PUPILS — CLASSES IV AND V

Class	Arith	RC(P)	RC(S)	WK	A W	S.S.	Spell	Total
IV (2986)	17.0	18.9	6.9	21.4	10.1	9.4	9.8	93.5
V (471)	17.5	19.5	7.0	22.1	10.8	9.8	10.5	97.2

A gain of 4% over the total score attained in Class IV presented a very dismal picture. Even in a sequential subject like arithmetic, the gain was a meagre 3%. This was the net result of efforts made and expenditure incurred for a whole year! Seen in light of the fact that there were nearly 17% fewer children in Class V as compared to class IV¹¹, and with the assumptions that (i) all of this difference is not due to increment in population and (ii) on the average, more low achievers, than high achievers drop out of the system, even the small observed gain might be more apparent than real.

Differences between regions are shown in the following table.

Table 15.6

ACHIEVEMENTS OF PUPILS — REGION-WISE

Region	Arith.	RC(P)	RC(S)	WK	A W	S.S.	Spell	Total
Capital City (184)	Mean 16.7 SD 6.1	19.4 6.6	6.7 2.9	21.3 6.8	10.9 3.8	10.0 4.4	10.1 4.8	95.1
Central Revenue Region (828)	Mean 18.3 SD 7.4	19.2 7.6	7.2 3.4	21.3 7.5	10.7 4.2	10.0 9.6	10.2 5.1	96.9
Southern Revenue Region (1207)	Mean 17.2 SD 6.8	19.8 8.5	7.2 3.4	22.0 7.6	10.1 4.3	9.6 4.1	10.2 5.3	96.1
Northern Revenue Region (772)	Mean 15.6 SD 6.6	17.1 7.0	6.2 3.0	19.7 7.3	9.2 3.6	8.4 3.9	8.9 4.6	85.1

⁹ The maximum possible score

¹⁰ Tripura is excluded. These tests were not common for all the States.

¹¹ The Fifth All India Educational Survey total enrolment in Class IV = 5,23,644 Class V = 4,36,642 (1986 statistics)

Northern Revenue region turned out to be the poorest achieving area, there was no difference in the Central and Southern regions with the children from the capital city following very closely. Contrary to the expectations, the children in the capital city of Bhubaneswar did not achieve higher than in the other regions. In Orissa, the same were better than those of the Northern Revenue region. In general, the differences between the regions were not very large.

Achievement of children on two tests, namely Arithmetic and Reading Comprehension (paragraphs) was also studied objective-wise and in case of Arithmetic, topic-wise too.

Table 15.7

ACHIEVEMENT IN ARITHMETIC — OBJECTIVE-WISE

Objective	Mean	SD	Mean as Percentage
Knowledge (19)	8.1	3.4	42.6
Understanding (12)	5.4	2.4	45.0
Application (9)	3.6	2.1	40.0
Total (40)	17.0	6.9	42.5

There were small differences between the means on three objectives with 'Understanding' and not 'Knowledge' having the highest percentage. It is likely that the difference between two types of items in terms of what they required from pupils was very thin.

Table 15.8

ACHIEVEMENT IN ARITHMETIC — TOPIC-WISE

Topic	Mean	SD	Mean as Percentage
Time (3)	1.1	.9	36.7
Factors and Multiples (7)	2.6	1.6	37.1
Fundamental Operations (12)	5.3	2.6	44.2
Weights and Measures (3)	1.0	.8	33.3
Fractions (5)	1.7	1.3	34.0
Decimals (7)	3.4	1.7	48.6
Unitary method and Others (3)	1.9	.9	63.3
Total (40)	17.0	6.9	42.5

The highest score per cent in Unitary method, was in line with observations elsewhere too. It is probably taught with introduction of rules at an early stage. It is in fact, also a part of daily life in simple purchase-transactions. That 'Decimals' had the next highest percentage score is worth noting as generally children are found to have difficulties with this topic. 'Fundamental Operations' were expected to have a high mean but it was not so.

12 This includes

(a) deriving meaning of difficult words from the context, and

(b) relating things at a simple level

13 This includes identifying the message or the central idea, and the title of the write-up

Table 15.9ACHIEVEMENT IN READING COMPREHENSION
OBJECTIVE-WISE

Objective	Mean	SD	Mean as Percentage
Noting Detail (17)	8.6	3.4	50.6
Simple Comprehension ¹² (13)	5.6	3.0	43.1
Inference ¹³ (14)	4.8	2.6	34.3
Total	18.9	7.9	42.9

The differences in the mean achievements on the three objectives were in the expected direction. Drawing 'Inference' is a higher level skill which is still being learnt. A 51% score on 'Noting Details' could be considered satisfactory.

The differences in the achievements of pupils when divided over location, gender and caste were also studied. Relevant details are presented in the tables that follow.

Table 15.10

DIFFERENCES IN ACHIEVEMENT — LOCATION-WISE

Test	Location	Mean	SD	t
Arith	U	16.9	7.0	79
	R	17.2	7.0	
RC(P)	U	19.3	7.5	1.24
	R	18.9	8.0	
RC(S)	U	6.9	3.0	43
	R	6.9	3.4	
W.K.	U	21.4	7.6	12
	R	21.4	7.5	
A.W.	U	11.0	4.1	6.87
	R	9.8	4.1	
S.S.	U	9.6	4.3	1.10
	R	9.4	4.0	
Spelling	U	10.0	4.9	62
	R	9.8	5.1	
RC (total)	U	26.2	9.7	81
	R	25.8	10.5	
T (5 + 6 + 7)	U	30.6	11.0	3.31
	R	29.0	10.8	

Urban - 735 Rural - 2261

* $p < .05$, * $p < .01$

With the exception of one test on choice of Appropriate Word, there were no differences among children from urban and rural area. The achievement on 'Appropriate Word' was likely to be influenced by media, namely, radio and TV as also interpersonal communication among the educated. It is likely that the children from urban area got more exposed to the favourable factors. The significant difference in aggregate T 5+6+7 could also be

due to the difference in the test mentioned above. However, the difference was not very substantial.

Table 15.11

DIFFERENCES IN ACHIEVEMENT -- GENDER-WISE

Test	Gender	Mean	SD	t
Arith	B	17.4	6.9	3.26
	G	16.6	7.1	
RC(P)	B	19.1	7.9	0.93
	G	18.8	7.9	
RC(S)	B	7.0	3.3	1.55
	G	6.8	3.3	
W.K.	B	21.7	7.7	2.73
	G	21.0	7.3	
A.W.	B	10.1	4.0	0.61
	G	10.2	4.3	
S.S.	B	9.5	4.1	0.18
	G	9.4	4.0	
Spelling	B	9.8	5.0	1.13
	G	10.0	5.2	
RC (Total)	B	26.1	10.3	1.22
	G	25.6	10.3	
T (5 + 6 + 7)	B	29.3	10.8	0.70
	G	29.6	11.0	

Boys - 1837 Girls - 1159

p < 0.1

The boys tended to score marginally higher than the girls. The difference in Arithmetic and Word Knowledge were statistically significant, but not very large.

On the whole the achievement of boys and girls were not very different.

Table 15.12

DIFFERENCES IN ACHIEVEMENT -- CASTE WISE

Test	Group	Mean	SD	F
Arith	SC	15.9	6.0	29.7*
	ST	15.5	6.3	
	BC	16.2	6.3	
	Others	18.2	7.5	
RC(P)	SC	17.9	7.9	18.32*
	ST	17.4	7.1	
	BC	18.9	7.0	
	Others	19.9	8.2	
RC(S)	SC	6.8	3.4	12.54
	ST	6.2	3.0	
	BC	7.0	3.0	
	Others	7.2	3.4	
W.K.	SC	21.4	6.6	10.94**
	ST	19.9	7.6	
	BC	21.1	7.1	
	Others	22.0	7.8	
A.W.	SC	8.9	4.0	43.7*
	ST	9.3	3.5	
	BC	10.2	4.2	
	Others	10.8	4.2	
S.S.	SC	8.8	4.1	22.6
	ST	8.7	3.8	
	BC	9.0	4.0	
	Others	10.0	4.1	

Test	Group	Mean	SD	F
Spelling	SC	9.2	4.8	17.3*
	ST	9.1	5.1	
	BC	8.0	4.0	
	Others	10.5	5.2	
RC Total	SC	24.8	10.1	19.25*
	ST	23.7	9.1	
	BC	25.8	9.4	
	Others	27.1	10.6	
T (5 + 6 + 7)	SC	27.0	10.3	38.0
	ST	27.0	10.0	
	BC	28.1	9.9	
	Others	31.3	11.1	

* p < 0.1

'Others' achieved highest in all the seven tests, getting a total of 98.6 as their mean score. It was followed by 91.2 as average over the aggregate by the Backward Classes. Scheduled Tribes had the lowest mean of 86.1. The composition of the group in Orissa was also in contrast with the same in some other States e.g. Tamil Nadu where the majority was categorised as Backward group, in Orissa it was only 5.4% of the total group.

While there were near nil differences over location (U/R) or gender (B/G), the same were quite marked with the highest achievement of 'Others' to the lowest of the Scheduled Tribes.

Factors Related to Pupil Achievement

All the pupil and home background related variables were regressed against achievement in Reading Comprehension and Arithmetic separately. To reduce the number of variables, home related variables were combined in three composite scores.

The regression coefficients for the variables entered in the three composite variable are given below.

Home Background

	RC	Arith
Location	.53	.71*
Father's Occupation	-.07	-.13
Caste	.70*	.77*
Father's Education	.49**	.21
Mother's Education	.25	.01
Number of Siblings	-.36	-.25
R	.15	.17

** p < 0.1

The variable significant for both the criteria was Caste, the differences between caste groups were found to be substantial. However, Location made the difference to achievement in Arithmetic and Father's Education to the scores in Reading Comprehension.

Difference between groups when divided over location was not significant for achievement in arithmetic or in tests of reading comprehension. In combination with other variables, it made a significant contribution in improving the correlation between Home Background and the criterion variables.

Facilities for Learning

	RC	Arith
Attended Pre-school	0.48	-0.23
Place for Study	-0.10	0.34
Help in Homework	1.08*	1.56*
Availability of Textbooks	0.95	0.77*
Availability of Study Material	-2.79*	-1.81
Helping Household	0.50	0.07
Regularity in Attendance	2.50	1.45*

* $p < .05$, * $p < .01$

The variables which contributed significantly towards achievement were receiving help with homework, availability of textbooks and other study material (such as something to write on or with) and regularity in attending school. Negative signs for Availability of Notebooks could not be understood. All other variables reflected family's involvement with the success of the child at school. Attending Pre-school programme seemed to have no impact on achievement, the percentage having attended pre-school was not very low-30%. It could be due to the quality of pre-schooling or the difference between what is done in pre-school and what is expected in the primary school.¹⁴

Educational Environment at Home

	RC	Arith
Get Newspaper	-.87	-.81
Get Magazines	2.25	.72
Books at Home	.33	.69*
Reads Books	.02	.41
R	.09	.11

* $p < .05$, * $p < .01$

The picture regarding educational environment at home was not as clear as was the case for the Facilitators for Learning. Insignificant regression coefficients were recorded against reading of books other than textbooks for both the criterion variables.¹⁵

The three composite variables and five others were regressed with achievement in Reading Comprehension and Arithmetic, increments in R^2 are summarised in the tables that follow.

Table 15.13(a)

CONTRIBUTION OF PUPIL-RELATED VARIABLES
TO ACHIEVEMENT IN READING COMPREHENSION

Variable	R	R ²	Increment in R ²	F	p
Word Knowledge	.4509	.2033	.2033	761.68**	.45
Facilities for Learning	.4817	.2320	.0287	111.50**	.25
Similar Language	.4942	.2442	.0122	48.04**	.15
Age	.4955	.2455	.0013	5.08*	-.11
Home Back ground	.4963	.2463	.0008	3.06	.15
Time Watch TV	.4967	.2467	.0004	1.51	.01
Eduatl. Environ.	.4971	.2471	.0005	1.91	.10
Gender	.4972	.2473	.0001	0.46	-.02

* $p < .05$, * $p < .01$

Table 15.13 (b)

CONTRIBUTION OF PUPIL-RELATED VARIABLES
TO ACHIEVEMENT IN ARITHMETIC

Variable	R	R ²	Increment in R ²	F	p
Word Knowledge	.4442	.1974	.1974	733.91*	.44
Facilities for Learning	.4741	.2248	.0274	105.30	.24
Home Background	.4824	.2327	.0080	30.99*	.16
Similar Language	.4855	.2357	.0030	11.77	.13
Gender	.4880	.2381	.0024	9.50	-.06
Time Watch TV	.4892	.2393	.0011	4.48	.00
Age	.4902	.2403	.0009	3.69	-.10
Eduatl. Environ	.4907	.2408	.0005	2.13	.10

N = 2986

* $p < .05$, * $p < .01$

The most significant variable with respect to differences in achievements of pupils was individual-related, namely Word Knowledge. The score on this test was taken as a substitute for a measure of general ability. In addition 'Facilities for Learning' and 'Similarity of Language' also contributed towards increment in R^2 with both the criterion variables. In Orissa, a large group (39%) of children reported the language spoken at home to be different from the medium of instruction.¹⁶ 'Age'

14 The State Coordinator commented: "Pre-schooling is managed through the ICDS scheme (Aanganwadis of Community Development Department) in an irregular manner without basic educational components. They are primarily meant for health care and feeding. There is no regular pre-schooling programme in the State."

15 The State Coordinator commented: "The negative result in respect of newspapers is due to the fact that the newspaper is not available to students in rural areas and there is no motivation for newspaper reading."

16 The variable had not been consistently significant in all States where such a percentage was fairly high. The extent to which the two languages are different would be important. A child speaking Gujarati or Punjabi at home and learning through the medium of Hindi was likely to face little difficulty but the same cannot be said for a child who spoke Tamil at home and learnt through Hindi or Marathi.

also seemed to make some difference. The increment contributed by Age for R^2 for Reading 'Comprehension' was statistically significant but not the one for Arithmetic. But 'Home Background', 'Time Watch TV' and 'Gender' all added to R^2 for Arithmetic. Gender had a negative 't' with both the criterion variables. Only marginally higher achievement of boys as compared to girls was noted in Table 15.11. 'Time Watch TV' had a near zero 't' both with Reading Comprehension and Arithmetic. Values of R^2 s for both the criteria were really the same.

In Tables 15.13(a) and 15.13(b) impact of individual-related variables including pupil's home background was studied. Values of cumulative R^2 in the tables were 25% and 24% respectively. The former was close to the country median and latter much higher than that - the median R^2 for Arithmetic being 18% only. In addition to the variability arising because of differences in ability or home background of the pupils, some of the differences were also likely to accrue because of the schools providing different levels of support for facilitating learning.

All the school-related variables excluding those providing information about teachers, were regressed with pupil achievement.

Table 15.14(a)

CONTRIBUTION OF SCHOOL-RELATED VARIABLES
TO ACHIEVEMENT IN READING COMPREHENSION

Variable	R	R^2	Increment in R^2	t	r
Teaching Experience of Headmaster	2021	0408	0408	82.61*	20
Book Bank	2844	0809	0400	8.40	-16
Operation Blackboard	3200	1024	0215	4.60	18
No Detention Policy	3354	1125	0101	2.18	-13
Exp as Headmaster	3470	1204	.0079	1.71	-03
PT A	3596	1293	0089	1.93	05
Room for Headmaster	3764	1417	0123	2.70	10

p < .05, * p < .01

In Orissa, the dispersion of the scores obtained by pupils tended to be somewhat narrower than in several other States. The range of school-means was also narrower. In Arithmetic, for example, the standard deviation of 196 school means was only 4.8 as compared to 6.7 for the scores of 3,010 pupils. This was along the expected lines. The range of school means could not be much narrower as the number of pupils in most schools was not very large. Relative variability between school means - as compared to the pupil scores was less in Orissa than in most other States.

Table 15.14(b)

CONTRIBUTION OF SCHOOL-RELATED VARIABLES
TO ACHIEVEMENT IN ARITHMETIC

Variable	R	R^2	Increment in R^2	t	r
Operation Blackboard	1988	0395	0395	7.98*	20
Book Bank	2518	0634	0239	4.92	-16
Teaching Exp of Headmaster	2798	0783	0149	3.10	11
Teachers per Class Group	3016	0909	0127	2.67	-10
Room for the Headmaster	3230	1043	0134	2.84	.08
Facilities for Teachers	3375	1139	0096	2.04	-07

p < .05, * p < .01

In the two tables given above, most of the variables which did not contribute statistically significant increment to R^2 were omitted. Only those variables, for which 't' was larger than 2.00 were retained. The total contribution to R^2 was 18% for Reading Comprehension and 15% for Arithmetic, both being lower than the median values for all the States. The school-related variables turned out to be less significant so far as differences in pupil-achievement were concerned than the home-related variables.

Keeping consistency of statistical significance of the contribution of an independent variable to R^2 in relation to both the criterion variables 'Book-Bank' and 'Operation Blackboard' were identified as the two most important variables. Operation Blackboard had reached 43% of the schools by 1991. The 't's were positive but not very high. Existence of Book-Banks, on the other hand, had negative correlations. If books were lent to the children for school hours and taken back from them, it might have turned out to be detrimental to learning¹⁷.

In addition to these two, headmasters with longer teaching experience also tended to produce somewhat higher mean achievements of the pupils. Its contribution to R^2 in relation to Reading Comprehension was statistically significant.

In general the school-related variables turned out to be less significant so far as differences in achievement were concerned. There were few apparent reasons for schools to be very different from each other, all but 3 were administered by the same agency, 85% were primary (only) schools. As most of the schools had been in existence for 20 or more years and they were all run by the government greater similarity was likely to develop.

17 The State Coordinator explained that the textbooks meant for children of Classes III and IV were expected to be used by more than one batch of children. Such an expectation might caution children to use the textbooks very carefully, affecting their learning.

Table 15-A
INTER CORRELATIONS OF PUPIL-RELATED VARIABLES AND ACHIEVEMENT

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
100	12-03	-04	-16	-13	-13	-26	-28	03	-16	-19	03	-07	-02	01	-3	-21	-16	-14	-34	01	00	-13	-02	-02	-02	-13	-02	-1			
100	-05	00	-12	-14	-03	-19	-18	07	-08	-10	00	03	-12	-12	-10	-07	-06	-07	-11	-10	-12	-06	-10	-19	-12	-13	-11	-18	-11	-04	
100	-01	06	04	-04	16	12	05	03	09	01	-00	00	-02	04	07	06	02	06	-06	-01	-03	-05	01	-00	02	-02	12	01	07		
100	-01	-08	-03	-24	-19	00	-10	-10	-09	-05	01	-02	-13	-13	-14	-09	01	-06	-04	-03	-08	-07	-09	-09	-04	-29	-01	-13			
100	43	08	35	27	-01	10	21	10	04	09	10	07	19	23	18	15	15	12	08	06	20	14	11	12	75	10	18				
100	12	34	29	-09	09	19	17	13	12	10	16	19	23	15	16	13	16	05	08	21	14	11	15	46	03	19					
100	14	13	-05	09	09	09	11	-01	07	13	15	14	08	12	-01	02	-01	04	10	04	12	02	13	07	14						
100	65	-07	30	38	17	12	10	08	36	31	41	30	35	05	13	05	11	20	14	15	12	77	06	27							
100	-10	29	35	13	16	06	05	38	33	36	29	10	07	09	19	15	14	10	64	01	28										
100	-02	00	-05	-34	-04	-01	-03	-05	-03	-04	-1	-03	-03	-09	-07	-03	-07	-03	-21	01	-04										
100	28	10	07	03	07	30	29	26	22	21	05	01	02	01	06	03	05	01	24	05	24										
100	19	17	08	08	25	23	30	29	23	10	04	02	03	12	08	03	04	33	16	20											
100	29	11	22	09	09	15	16	12	04	03	01	06	07	09	04	03	18	11	10												
100	12	03	13	04	08	13	13	-16	-18	-13	-11	-11	-07	-09	-18	11	-74	02													
100	10	07	-02	02	-01	02	01	03	-01	04	08	07	02	02	10	07	-05														
100	06	07	-05	-01	-02	12	12	13	09	12	16	11	13	11	55	03															
100	51	35	27	31	01	02	01	02	01	02	10	09	06	02	32	01	24														
100	37	29	26	06	09	04	05	16	12	08	08	31	08	84																	
100	49	33	10	06	00	04	14	11	11	05	40	02	52																		
100	36	07	03	01	02	14	09	07	03	29	-02	31																			
100	-00	02	-00	03	09	06	08	01	28	-04	23																				
100	58	44	44	50	52	43	59	16	24	10																					
100	61	45	53	56	45	97	16	24	11																						
100	32	35	44	35	79	10	19	05																							
100	46	44	40	45	14	17	07																								
100	57	41	52	24	21	16																									
100	51	58	19	19	12																										
100	46	18	15	09																											
100	15	25	10																												
100	12	38																													
100	13																														
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Table 15-B

INTER CORRELATIONS OF SCHOOL-RELATED VARIABLES AND ACHIEVEMENT

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
1	100	23	04	-08	-11	-	03	47	22	11	.13	-10	-07	-42	09	10	02	04	-04	-10	-09	01	10	02	-05	08	08	05	-02	-00	03	08	09	-09	05	07	06	08
2	100	69	46	-19	-10	-	09	08	28	.10	.17	-05	-17	-37	09	05	01	-01	-02	04	.10	04	10	04	02	22	20	08	-06	-02	10	14	12	07	15	11	06	14
3	100	34	-14	01	-	02	-03	34	14	19	-15	-25	-54	15	13	07	03	01	11	17	-01	08	-05	-08	22	22	09	-04	06	11	21	14	05	24	14	14	20	
4	100	-10	03	-	03	-06	13	04	14	-07	-12	-25	00	06	03	-01	-02	06	15	04	-00	08	05	08	09	08	09	13	-00	-03	-03	-06	08	03	06	-03		
5	100	-29	-	02	02	16	-14	-29	18	27	18	-19	-11	-17	-10	-23	-12	-07	-02	09	-14	-03	-19	-16	00	21	05	01	-08	-02	-02	-19	-05	-13	-07			
6	100	-	-02	-05	-12	08	11	-07	-09	-01	20	07	15	-01	11	-03	01	07	-14	21	01	-10	-09	-06	-16	07	-05	01	04	03	09	02	01	02				
7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
8	100	-06	05	01	-05	19	02	-02	00	04	-04	10	-02	06	16	02	-00	-05	22	03	02	12	11	04	-01	-02	-01	-02	-01	-01	-05	-02						
9	100	-03	06	02	-16	-01	07	-11	-09	-14	20	-15	-23	-10	-04	02	-06	-12	-01	-04	05	00	-01	08	-02	06	-03	-03	05	02	00							
10	100	10	09	09	-05	-17	15	13	14	11	-01	09	-02	09	.02	-15	02	12	13	09	02	05	11	05	-02	-02	03	05	.11	03								
11	100	10	-07	-09	-14	18	06	-05	01	10	06	-02	05	.02	-00	-00	17	13	03	04	07	03	06	-06	-02	10	08	14	03									
12	100	-17	-33	-16	25	31	22	14	30	30	-02	-02	06	00	-03	19	18	20	-15	-03	.08	07	07	01	15	18	14	07										
13	100	22	06	-04	04	-10	14	-02	-05	19	-05	10	-06	-01	-06	-07	-07	16	02	-03	01	-02	-12	-07	-03	06	-00											
14	100	22	06	-04	04	-10	14	-02	-05	19	-05	15	-06	-00	-06	-06	-13	24	02	-01	-11	-02	-11	-22	-16	-10	-09											
15	100	-06	-16	-07	-11	-19	-15	-16	-05	-10	-03	-04	-21	-22	-13	00	-05	-04	-17	-08	10	-16	-09	-09	-15													
16	100	49	27	22	17	12	07	01	-06	-03	-02	-03	-02	04	-10	-01	-10	-02	00	-08	-01	-09	00	-01														
17	100	25	20	30	17	14	01	05	-01	03	16	10	05	-02	09	-06	02	-03	-10	-07	03	00	00															
18	100	11	19	15	04	-03	-02	00	07	-00	02	-01	-20	-04	08	09	10	02	07	12	14	10																
19	100	.47	41	10	-04	10	-07	04	-06	-06	30	01	-01	-07	-00	-02	-08	-05	-00	01	-01																	
20	100	42	27	-10	-02	-06	10	-05	-08	33	03	00	-00	05	02	-11	02	01	-02	04																		
21	100	05	00	12	-03	12	02	02	51	-05	-04	03	11	11	-03	19	15	07	12																			
22	100	04	03	-07	12	04	03	-05	17	21	-16	-15	-17	-21	-08	-18	-13	-16																				
23	100	05	-01	13	24	25	-15	02	-03	-05	-15	-07	-15	-09	-08	-09	-13																					
24	100	03	04	06	08	09	13	02	-01	01	-01	-05	-02	03	.00	01																						
25	100	-03	00	01	-10	05	-01	-00	04	09	-03	02	00	-03	06																							
26	100	19	17	03	06	-02	-00	-04	-01	-06	-04	07	-04																									
27	100	95	-03	-04	09	06	-01	-11	02	04	-00	07	-04																									
28	100	-03	-07	06	07	-02	-09	-00	04	01	08	-04																										
29	100	09	-03	20	13	14	06	21	21	17	18																											
30	100	19	04	05	05	08	.09	03	05	05																												
31	100	-03	-01	-05	00	-02	01	04	-02																													
32	100	76	61	58	68	71	66	75																														
33	100	76	62	71	78	69	98																															
34	100	50	51	71	51	87																																
35	100	55	52	45	62																																	
36	100	71	66	69																																		
37	100	70	79																																			
38	100	67																																				
39	100																																					

Punjab

According to the ratio of number of pupils enrolled in Class IV in the State as compared to the total number in the country, Punjab was to test 2,500 pupils to be selected from 107 schools. The State reached nearly all schools and returned data for 75% of the sample expected. In addition, tests were also administered to another group of 619 pupils from Class V.

Table 16.1

SAMPLES PLANNED AND ENTERED IN ANALYSES

SN Region	No. of Schools		No. of Pupils	
Ludhiana	7 ¹		175	
Patiala	38	7 ²	919	143
Jalandhar	62	33	1197	584
		65		1222
Total	107		2591	
		105		1949

The maximum fall-out was from the district of Patiala. It incidentally also had a much lower achievement when compared to the two other regions. As the extent of absenteeism and poor achievement of pupils are likely to be correlated positively, the two could have occurred concurrently. Moreover, the State, having been a disturbed area for long, the situation could have become particularly difficult during a certain time-interval, affecting both the attendance and achievement of pupils. Nevertheless, the original composition of the State sample was somewhat disturbed, giving an advantage to the State in its over all mean.

The representativeness of the sample was also checked by comparing some of the statistics available from this set of data with those available in the Fifth All India Educational Survey conducted by the NCERT in 1986.

A small increase in the percentage of primary (only) schools could be attributed to the difference in populations of schools under the 1986 survey and this study. The present study was confined only to schools where the medium of instruction was Punjabi. It excluded En-

glish-medium schools which were mainly private or private aided and had Classes I to X/XII. The percentage of primary schools was likely to be higher among vernacular-medium schools.

Table 16.2

SAMPLE AS COMPARED TO THE POPULATION

Variable	Percentage	
	1986 Survey	Sample in the Study
Primary (only) Schools	97.0	99.0 ¹
Girl Students	45.6	47.5 ¹
Scheduled Caste Students	32.6	39.2 ¹
Scheduled Tribe Students	0.0	1.1 ¹
Women Teachers	51.0	64.2 ¹
Trained Teachers	98.7	98.9 ¹

The increment in percentages of girls, Scheduled Caste and Scheduled Tribe children was as expected because of the continued national drive to get these groups into schools. The difference in percentage of SC students was rather high, but it should be seen in the light of omission of private fee-charging schools from the population of schools, and a basic, large proportion of this group in the population.

A sharp increase in the percentage of women teachers was also in the expected direction, both because of more women entering employment and the recommendation of the National Policy of Education, 1986, to have at least one women teacher in the (minimum) two-teacher primary schools.

The Tests in Punjabi

Work on this survey started in Punjab at a relatively later stage. The State, thus, did not contribute any material which formed the basis for developing tests in language, nor could it participate in the try-out of the items. However, the Punjabi language being very similar to Hindi in its grammar and having a large overlapping vocabulary, little difficulty was reported in translating the tests into Punjabi.

1 The number planned.

2 The number retained.

Source

3 The School Questionnaire

4 The Pupil Questionnaire

5 The Teacher Questionnaire.

Table 16.3

DIFFICULTY VALUES OF THE ITEMS

Pass Percentage	Arith	RC (P)	RC (S)	W K	A W	S S	Spell
0 - 9			1				
10 - 19	2	2	1		1		
20 - 29	2	2			1		1
30 - 39	3	6	-		5	1	1
40 - 49	13	11	3	11	4	2	2
50 - 59	5	13	7	18	5	-	10
60 - 69	6	8	3	8	5	10	10
70 - 79	6	2	1	3	3	5	1
80 - 89	3						
Median	49.5	50.3	53.8	51.5	51.5	65.5	58.0

The tests proved of reasonable difficulty in Punjab. Except for the tests of Sentence Structure and Spelling, the median pass percentage varied around 50. Sixty-four per cent of the items were attempted correctly by more than 50% pupils. The two tests mentioned earlier proved rather easy. These were constructed by the State centres themselves.

The median Discrimination Indices of the items in the tests varied from 57.0 to 77.5.

The Groups in the Study

The Pupils

Of the nearly 2,000 pupils of Class IV, 74% were from rural areas, 47.5% were girls. The largest proportion -- 48.5% -- belonged to 'Others' while 39% were Scheduled Caste, followed by 11% of Backward Classes, the Scheduled Tribe children were a negligible 1.1%. The average age of these children was 10.1 years.

Forty per cent fathers and 55% mothers were illiterate, with another 15% fathers and 23% mothers having studied up to the primary level only. On the other side, 4% fathers and 1.4% mothers were graduates. Thirty-three per cent fathers were farmers and a nearly equal percentage were unskilled workers, only 3% categorised their fathers under 'Others', which could include unemployed persons. Four per cent fathers were either professionals or had high-salared jobs. Thirty-one per cent children came from families with four or more children and 16% from small families of 1-2 children.

The group that did not speak Punjabi at home, which was their medium of instruction at school, was a negligible 2%. Sixteen per cent had attended some pre-school programme.

The percentages of children who reported availability of most textbooks and other study material were 68% and 63%, respectively. Five per cent children had few textbooks and 11% reported inadequate availability of notebooks or other material to write with. Almost 60%

got help in their studies from their families and 21% said they had some place where they could sit and study. Nearly 35% children helped their families for two or more hours daily with domestic or other work. Less than 1% children said they had to miss school often, 76% said they could attend it regularly.

A newspaper and magazines were available in 15% and 8% families only, respectively, and nearly 80% had no books at home. Only 26% children read something other than their textbooks. More than 50% children watched TV for some time everyday.

Children from Punjab did not have many advantages in terms of their home background, the percentage of educated parents was not high, they did not have books or magazines at home. Nearly 40% of the group belonged to the socially disadvantaged group of Scheduled Caste children. Pre-school education was available to few children. But they were learning in their mother tongue.

The Teachers

Of the 204 teachers that responded to the questionnaire meant to elicit information about teachers, 73% were teaching in the rural area, 64% were women. The proportion of women teachers in Punjab was smaller only to that in Delhi. Most of the teachers (70%) were in the age-group 35-50 years. The same percentage had taught at least for more than ten years; only 25% seemed to be new, having been in the profession for less than five years.

Seventy-one per cent teachers were matriculates, 23% had studied upto Class XII, 4% were graduates, only 2.5% had not passed the matriculation examination.

Ninety per cent teachers had gone through two years of Junior Basic Training and another 7% had received a one year programme of professional education for primary school teachers, a small 2.5% were B Eds. Less than one per cent teachers were untrained. Eighty per cent had received some inservice training.

Eighty-five per cent of the teachers lived quite close to their schools as was indicated by the time required to travel to and from their place of work. This large group spent one hour or less everyday for this purpose.

Only 20% teachers said they used some innovative practices in their teaching although 85% believed that it would improve both the interest and achievements of the pupils. Very few teachers reported not using material other than textbooks; 88% had developed some of it themselves, 57% had even involved their pupils in this activity.

A majority of 54% teachers carried out 2-3 evaluations a year, but 39% administered tests every month; on the other side, 8% teachers examined their pupils only

once a year. Ninety-three per cent teachers used the results of evaluation for diagnosing weaknesses in learning or teaching or both, the rest used it only for promoting students to the next class.

More than half the teachers did not have copies of the textbooks, they borrowed them from pupils, probably on the spot, of the rest, 36% had their own copies. Sixty-one per cent did not have access to a Punjabi language dictionary.

Ninety-six per cent teachers said they helped the weak students by paying special attention to them in the class, 4% advised parents to arrange private tuitions. Ninety-one per cent teachers said they checked pupils' homework regularly. Sixty-six per cent teachers reported that students frequently asked questions in class -- indicating a somewhat premissive environment.

The teachers in Punjab had a moderate amount of general education, well supported by professional education — both pre-service and in-service. More of them kept to traditional practices.

The Headmasters

Most of the 99 headmasters who responded to the school questionnaire were mature, 97% being older than 35 years, in fact 50% were above 50 years of age. Correspondingly, 88% had taught for more than 15 years; only 3% of this group had teaching experience of less than five years. But 37% had been head teachers for less than five years. All of them were trained, most had received one or two years of professional education meant for preparing teachers for primary schools, only one of them had a B.Ed. degree.

The Schools

Seventy-six per cent of the schools from where data were available were in the rural area; 94% were administered by the government and another 3% by local bodies. Only 3% were private aided or totally private. All but one school had only primary classes. Except 2% that admitted either boys or girls only, the schools were co-educational. Eighty-four per cent had been in existence for more than 20 years, only 2% were newly opened, i.e., during the last ten years.

More than 50% schools had a separate room for the headmaster, but a separate room for the teachers was available in only 5% of the schools. The drinking-water facility was available in 93% of the schools, and urinals for girls in 58% of them. Nineteen per cent schools reported having Book Banks, the average number of books in the library was 235.

Two-thirds of the schools followed 'No Detention Policy' only up to Class I, 8% did not respond to the question. It is likely that they did not automatically promote children from Class I to Class II. Ten per cent schools said they did not detain children right up to Class IV. Operation Blackboard had been implemented in 42% of the schools up to 1991. Eighty per cent schools reported having a Parent Teacher Association but only 69% reported having one or more meetings every year.

In brief, the primary schools in Punjab had trained and experienced headmasters. When compared to other States the physical facilities were better. Nearly all schools that participated in the study had primary classes only and were managed by the State government.

Achievements of Pupils

Data from 2,568 pupils were analysed, of these 1949 were from Class IV and the rest from Class V. The achievements of children of Class IV, the main group under reference, are given below.

Table 16.4

ACHIEVEMENTS OF CHILDREN

Test	Arith (40) ⁶	RC(P) (44)	RC(S) (16)	WK (40)	A.W. (24)	S.S. (18)	Spell (25)	Total (207)
Mean	21.5	21.6	8.2	22.6	12.1	11.5	14.4	111.9
SD	8.0	10.3	4.4	9.9	5.5	4.6	7.3	
Mean as percentage	53.7	49.1	51.2	56.5	50.4	63.9	57.6	54.1
KR-20	.89	.93	.87	.93	.86	.86	.93	
All India Median as Percentage.	41.2	45.4	43.1	49.5	41.7	57.8 ⁷	42.8 ⁷	45.2

With the exception of the test on Reading Comprehension based on paragraphs, the average scores on all the tests were above 50%. On the two tests which were to be prepared or adapted by the State, namely, Sentence Structure and Spelling, these went up by another 10% or more. The distributions on these two tests were also somewhat skewed negatively. The tests could have become easier than the Hindi version. This tendency was also noticed in Word Knowledge, a test where translation could alter the difficulty level more easily. Nevertheless, the achievements in Punjab were considered satisfactory.

All States were requested to administer the test battery to a small sample — at least 200 — to be selected from a minimum of 10 schools of pupils from Class V. The purpose was to study the gain over a school year.

⁶ The maximum possible score.

⁷ Tripura is excluded. These tests were not common for all the States.

Table 16.5

MEAN ACHIEVEMENTS OF PUPILS — CLASSES IV AND V

<i>Class</i>	<i>Arith</i>	<i>RC(P)</i>	<i>RC(S)</i>	<i>WK</i>	<i>A W.</i>	<i>SS</i>	<i>Spell</i>	<i>Total</i>
IV (1949)	21.5	21.6	8.2	22.6	12.1	11.5	14.4	111.9
V (619)	23.0	22.3	8.5	24.1	13.0	12.1	16.2	119.2

Although pupils of Class V scored, on the average, higher than those of Class IV in all the tests, the differences were small. The proportionate difference was highest on the test on Spelling, this perhaps is a skill that is emphasised after the children have mastered the basic minimums of writing. One had expected a higher gain in the test in arithmetic, too, but this was limited to an average of 1.5 scores only. The improvement was least in Reading Comprehension. Deficiency in understanding, on the part of the teacher, of the higher skills involved in reading comprehension could be partly responsible for the very limited improvement.

The differences in achievements of children divided over regions were also studied. Ludhiana was selected as a replacement for the Capital city as the Union Territory of Chandigarh was the seat of the governments of both Punjab and Haryana. The differences over the regions were large and clear-cut; the pattern of differences were the same on each of the seven tests, culminating in the maximum difference of 72 points (35%) in the highest and lowest-achieving regions. In the case of Ludhiana, the sample of children was selected from the city only, in the Patiala region, the sample was drawn from the district of Bhatinda. Ludhiana is an industrial city while Bhatinda may be a backward area. The differences among the regions were very substantial.

The children's achievement on two of the tests, namely, Arithmetic and Reading Comprehension (paragraphs), were studied as divided over objectives, and in case of Arithmetic, topics as well.

Table 16.6

ACHIEVEMENT OF PUPILS — REGION-WISE

<i>Region</i>		<i>Arith</i>	<i>RC(P)</i>	<i>RC(S)</i>	<i>WK</i>	<i>A W.</i>	<i>SS</i>	<i>Spell.</i>	<i>Total</i>
Ludhiana	Mean	28.1	33.2	13.1	30.4	17.7	15.2	20.1	157.8
(143)	SD	4.9	3.5	1.9	9.3	3.1	2.4	4.4	
Patiala	Mean	17.4	14.1	6.3	17.8	9.2	9.2	11.4	85.4
(584)	SD	8.7	9.3	4.6	10.5	6.2	5.2	7.7	
Jalandhar	Mean	22.7	23.8	8.6	23.9	12.8	12.2	15.2	119.2
(1222)	SD	7.0	8.9	3.9	8.6	4.6	4.0	6.9	

Table 16.7

ACHIEVEMENT IN ARITHMETIC — OBJECTIVE-WISE

<i>Objective</i>	<i>Mean</i>	<i>SD</i>	<i>Mean as Percentage</i>
Knowledge (19)	9.7	3.5	51.0
Understanding (12)	6.8	2.8	56.7
Application (9)	5.0	2.6	55.5
Total (40)	21.5	8.0	53.7

The lowest percentage was in knowledge items, at best it could be explained as a case of 'no differences' over the three objectives, comparable percentages over 'Knowledge' and 'Understanding' had been noticed in some other States as well but a comparable percentage on 'Application' items had not been obtained in any other State, nor had the percentage for 'Knowledge' been smaller than the one for 'Understanding'.

Table 16.8

ACHIEVEMENT IN ARITHMETIC — TOPIC-WISE

<i>Topic</i>	<i>Mean</i>	<i>SD</i>	<i>Mean as Percentage</i>
Time (3)	2.0	1.0	66.7
Factors and Multiples (7)	3.3	1.5	47.1
Fundamental Operations (12)	7.0	3.0	58.3
Weights and Measures (3)	1.3	.9	43.3
Fractions (5)	2.4	1.4	56.7
Decimals (7)	3.5	4.7	50.0
Unitary Method and Others (3)	2.1	.9	70.0
Total	21.5	8.0	53.7

A high percentage of score on Unitary method was noticed in all the States which could be due to the three items being very easy or the questions being very similar to the ones practised in the classrooms. It had also been

hypothesised that simple problems (sums) involving the unitary method were taught by teachers by introduction of rules and practised sufficiently in the classroom. Its proximity to the everyday experiences of the children as the reason behind the high pass percentages could not be supported as the percentage score on Weights and Measures, an area of daily experience of the children, had the lowest average, the latter was difficult to explain. A plausible reason could be the use of different — at times even faulty — nomenclature in day-to-day transactions. For example, the use of 'pav' for 250 grams, or a kilo instead of a litre for liquids.

A high percentage score on Time could be due to the 'recency' factor. Factors and Multiples and Decimals were considered somewhat difficult areas. More than 58% average for Fundamental Operations was considered barely satisfactory.

Table 16.9

MEAN ACHIEVEMENT IN READING COMPREHENSION
OBJECTIVE-WISE

Objective	Mean	SD	Mean as Percentage
Noting Detail (17)	9.7	4.8	57.0
Simple Comprehension ⁸ (13)	6.4	3.4	49.2
Inference ⁹ (14)	5.5	3.1	39.3
Total (44)	21.6	10.3	19.1

Table 16.10

DIFFERENCES IN ACHIEVEMENT — LOCATION-WISE

Test	Location	Mean	SD	t
Arith	U	22.5	8.4	3.18*
	R	21.2	7.8	
RC(P)	U	22.2	10.8	1.51
	R	21.4	10.2	
RC(S)	U	8.8	4.7	3.47
	R	8.0	4.2	
W.K.	U	22.6	11.6	18
	R	22.5	9.2	
A.W.	U	12.2	6.1	55
	R	12.0	5.3	
S.S.	U	11.2	5.1	1.95
	R	11.6	4.4	
Spelling	U	13.5	7.6	3.17*
	R	14.7	7.2	
RC (total)	U	31.0	14.4	2.28
	R	29.4	13.1	
T (5 + 6 + 7)	U	36.9	16.7	1.99
	R	38.4	14.0	

Urban - 503 Rural - 1446

* $p < .05$ * $p < .01$

8 This includes:

- (a) deriving meaning of difficult words from the context, and
- (b) relating things at a simple level

9 This includes identifying the message or the central idea and the title of the write-up

10 The percentage of enrolment from rural areas in the 1986 survey was 81.

In contrast to a near comparable achievement in Arithmetic on different objectives, the differences in the mother tongue were clear-cut and in the expected direction. The simplest level of comprehending, i.e., imbibing information provided, was found to be easiest, and drawing inference, the most difficult.

The differences in the achievements of pupils, when divided over location, gender and caste, were also studied. The relevant details can be seen in Tables 16.10 to 16.12.

Seventy-four per cent of the sample of pupils in this study was from rural areas.¹⁰ In three out of seven tests, urban children scored somewhat higher than their rural counterparts, two of these differences were statistically significant. The rural group made up some of the differences by scoring higher than urban children in the tests on structure of a sentence and spelling, the difference for the latter was statistically significant. A difference of 1.6 scores (only) in the total went in favour of urban children. However, the differences need to be seen in the light of the very high scores attained by a small sample of children from the city of Ludhiana.

Table 16.11

DIFFERENCES IN ACHIEVEMENT — GENDER-WISE

Test	Gender	Mean	SD	t
Arith	B	21.2	8.2	2.06
	G	21.9	7.7	
RC(P)	B	21.0	10.2	2.76*
	G	22.3	10.1	
RC(S)	B	8.0	1.5	2.46
	G	8.5	1.3	
W.K.	B	22.2	9.9	1.40
	G	22.9	9.9	
A.W.	B	11.7	5.4	3.03*
	G	12.5	5.6	
S.S.	B	11.2	4.7	3.63*
	G	11.9	4.5	
Spelling	B	13.8	7.4	3.80
	G	15.1	7.3	
RC (Total)	B	29.0	13.4	2.92*
	G	30.7	13.6	
T (5 + 6 + 7)	B	36.7	14.7	4.17*
	G	39.5	14.6	

Boys - 1024 Girls - 925

$p < .05$, * $p < .01$

In contrast to the urban/rural divide, the differences were more pronounced among boys and girls, with the latter achieving consistently higher scores in all the tests.

leaving no room for doubt about the direction of the difference. The number of girls in the sample was lower than that of the boys and formed 47.5% of the sample only. Where the homes are equally supportive of education of boys and girls, the latter have been found to achieve higher in examinations.¹¹

Table 16.12

DIFFERENCES IN ACHIEVEMENT — CASTE-WISE

Test	Group	Mean	SD	t
Arith	SC	21.7	8.0	4.18
	ST	21.1	6.0	
	BC	22.8	7.5	
	Others	21.0	8.1	
RC(P)	SC	22.3	10.1	3.96
	ST	21.8	8.6	
	BC	22.6	9.7	
	Others	20.8	10.6	
RC(S)	SC	8.3	4.5	2.76
	ST	8.2	3.9	
	BC	8.9	4.1	
	Others	8.0	4.4	
W.K.	SC	22.4	9.8	5.25
	ST	23.0	10.6	
	BC	25.0	8.9	
	Others	22.1	10.1	
A.W.	SC	12.1	5.4	3.34
	ST	12.8	4.9	
	BC	13.1	4.8	
	Others	11.8	5.7	
S.S.	SC	11.7	4.8	1.44
	ST	11.5	4.7	
	BC	11.9	4.3	
	Others	11.3	4.6	
Spelling	SC	14.5	7.4	1.81
	ST	17.3	5.9	
	BC	14.8	6.8	
	Others	14.2	7.4	
RC (Total)	SC	30.6	13.4	4.03
	ST	30.0	12.2	
	BC	31.5	12.5	
	Others	28.8	13.7	
T (5 + 6 + 7)	SC	38.3	14.9	2.42
	ST	41.6	13.7	
	BC	39.8	12.9	
	Others	37.3	15.0	

SC - 764, ST - 22, BC - 218, Others - 945

p < .05, p < .01

Two of the four caste groups were prominent in the sample, SC being 39.2% and 'Others' - 48.5%, ST were a negligible 1.1%, and Backward Classes, another 11.2%.

The differences on all the tests were statistically significant. Going by the total score on all the tests, Backward Classes had the highest aggregate of 119.1, followed by ST (118.7), SC (113.0) and 'Others' (109.2). That Backward Classes achieve higher than 'Others' had been seen in some other States as well. 'Others' had the lowest mean score. If the major part of the group belonged to the urban areas, it could come from the lower socio-economic educational group as the children of the higher socio-economic group are often sent to English-medium schools by the parents.

Factors Related to Pupil Achievement

All the variables related to the individual or to the home background were regressed against achievement in Reading Comprehension and Arithmetic separately. To reduce the number of variables, some of these were combined to get the composite scores on three general variables: 'Home Background', 'Facilities for Learning' and 'Educational Environment at Home'.

The regression coefficient for the variables entered in the three composite variables are given below.

Home Background

	RC	Arith
Location	.42	.48
Father's Occupation	1.19	.43
Caste	-.36	-.14
Father's Education	.84	.21
Mother's Education	2.31	1.07
Number of Siblings	.96	-.42
R	.28	.20

p < .05, p < .01

'Father's Occupation' and 'Mother's Education' turned out to be most important with reference to variability in school achievement. In addition 'Father's Education' and the 'Size of the Family' had some influence on achievement in language but the same did not make a significant contribution to differences in achievement in arithmetic. The 'r' between 'Mother's Education' and the number of siblings was -.145.

Facilities for Learning

	RC	Arith
Attended Pre-school	1.01	.64
Place for Study	-.83	.89
Help in Homework	3.05	1.12
Availability of Textbooks	2.57	2.90
Availability of Study Material	-1.37	-2.73
Helping Household	1.57	-.03
Regularity in Attendance	1.18	-1.55
R	.17	.22

p < .05, p < .01

¹¹ As observed in various public examinations.

'Help in Homework' and availability of study material, including textbooks, made a significant contribution to achievements of children. It expressed the family's involvement with their children's studies. The last two variables listed, namely, 'Helping Household' and 'Regular Attendance', were other facets of concern of the family but their influence on achievement for the two criterion variables had opposite signs. The negative sign for the latter in relation to arithmetic could not be explained, 'r' between these two variables was - 0.75.

The value of R also differed for these two composite variables. While general home background had a higher relationship with Reading Comprehension, concern of the family had a higher R with achievement in Arithmetic. It is likely that learning of language is more easily influenced by the general environment at home while the family's concern gets concretised in extending help in arithmetic.

Educational Environment at Home

	RC	Arith
Get Newspaper	3.09'	1.91
Get Magazines	3.11	1.32
Books at Home	-2.78	-1.41"
Reads Books	-.87	.36
R	.15	.13

' p < .05; " p < .01

The interest of the family in reading, as expressed in availability of reading material at home, seems to influence the child's performance in study-related tasks. This composite variable had smaller Rs than the previous two.

These three variables along with five others were regressed with achievement in reading comprehension and arithmetic, separately. Their contribution to total variance in achievement of the two criterion variables is given below.

Table 16.13(a)

CONTRIBUTION OF PUPIL RELATED VARIABLES
TO ACHIEVEMENT IN READING COMPREHENSION

Variable	R	R ²	Increment in R ²	b	t
Word Knowledge	.4685	.2195	.2195	5.4760	.47
Home Background	.5089	.2589	.0394	1.0355	.28
Time watch TV	.5150	.2652	.0063	.1673	.21
Educat. Environ	.5204	.2708	.0056	.1485'	.16
Facilities for Learning	.5224	.2729	.0020	.543	.18
Gender	.5239	.2745	.0016	4.43	.07
Similar Language	.5249	.2755	.0010	2.71	-.03
Age	.5249	.2755	.0000	-	-.07

' p < .05; " p < .01

Table 16.13 (b)

CONTRIBUTION OF PUPIL — RELATED VARIABLES
TO ACHIEVEMENT IN ARITHMETIC

Variables	R	R ²	Increment in R ²	b	t
Word Knowledge	.4367	.1907	.1907	4.5890'	.44
Home Background	.4530	.2052	.0145	.3556	.20
Time Watch TV	.4613	.2128	.0075	.1862	.19
Educat. Environ	.4647	.2160	.0032	.793	.12
Age	.4656	.2168	.0009	.226	-.08
Gender	.4662	.2173	.0005	-	.05
Facilities for Learning	.4664	.2175	.0002	-	.10
Similar Language	.4665	.2176	.0000	-	.04

p < .01

In addition on to the scores on the test on Word Knowledge, which was considered a surrogate for a test of general ability, 'Home Background', 'Time Watch TV' and 'Educational Environment at Home' seemed to make a difference to the achievement of children at school. The significant contribution of watching TV in Punjab would be seen in the light of the fact that more than 50% children reported watching TV and that there was significant scope for the variable to be operative. It also had significant positive 'ts' with both the criterion variables. As in other States, more independent variables contributed to increment in R² with Reading Comprehension than Arithmetic. While in the case of the latter criterion, no other variable made a significant contribution to R², 'Facilities for Achievement' and 'Gender' both turned out to be significant with respect to differences in achievement in language.

The difference in the language spoken at home and the medium of instruction was not important per se in Punjab -- only 2.5% children reported the two to be different. Age had a negative 'r' with both the criteria.

The percentage of explained variance related to achievements of pupils in Reading Comprehension and Arithmetic that was associated with home- and individual-related variables was quite substantial in Punjab. Both the R²s were high compared to what was obtained in several other States. This was expected in a rich State like Punjab, there was greater possibility of homes providing varied environments for facilitating learning.

Some of the differences in pupil achievement would also arise because of the variation in the facilities available and the practices adopted by the schools. All the school-related variables on which data were obtained in this study, excluding those providing information about the teachers and the practices adopted by them in teaching, were regressed with pupil achievement.

The range of school means in most States was larger than would be generally expected. In Punjab, too, the standard deviation of 93 school means was 6.5¹² points compared to 8.0¹² of the distribution of scores obtained by nearly 2,000 pupils

Table 16.14(a)

CONTRIBUTION OF SCHOOL-RELATED VARIABLES
TO ACHIEVEMENT IN READING COMPREHENSION

Variable	R	R ²	Increment in R ²	F	p
Age of the Headmaster	2483	0616	0616	5.98	.25
Teachers Untrained	3673	1349	0733	7.62	.19
Boys/Girls/Co-ed	4218	1779	0430	4.66	.16
Rooms per Class Group	4548	2069	0290	3.21	.16
Facilities for Pupils	4945	2445	0377	4.34	.10
Proportion SC/ST	5194	2698	0253	2.97	.18
Percentage Attendance	5395	2911	0213	2.55	.16
Location of School	5538	3067	0157	1.90	.12
Years of Existence	5666	3210	0143	1.74	.14
Time Given (Arith.)	5765	3323	0113	1.39	.05
Time Given (Lang.)	5920	3505	0182	2.26	.03
PTA	6075	3691	0182	2.36	.18
Books in the Library	6197	3840	0149	1.91	.02
Pre-Primary Classes	6363	4048	0209	2.74	.19
Admn. of School	6440	4147	0099	1.30	.14
Facilities for Teachers	6527	4261	0114	1.50	.04
Professional Training of Headmaster	6634	4400	0140	1.87	.20

p < .05, * p < .01

Table 16.14(b)

CONTRIBUTION OF SCHOOL-RELATED VARIABLES
TO ACHIEVEMENT IN ARITHMETIC

Variable	R	R ²	Increment in R ²	F	p
Age of the Pupil	2491	0620	0620	6.02	.25
Facilities for Pupils	3078	0947	0327	3.25	.18
PTA	3399	1155	0208	2.09	.17
Book Bank	3664	1343	0187	1.90	.18
Teachers Untrained	3966	1573	0230	2.38	.05
Total Enrolment	4145	1718	0145	1.50	.33
Age of the Headmaster	4301	1850	0132	1.37	.02
Participation in Projects	4435	1967	0117	1.22	.08
Working Days	4625	2139	0172	1.82	.06
Boys/Girls/Co-ed	4774	2279	0140	1.49	.07
Time Given to Arith.	4896	2398	0118	1.26	.09
Time Given to (Lang.)	5160	2662	0265	2.89	.01
Operation Blackboard	5293	2802	0140	1.53	.03
Classes in School	5273	2887	0086	.94	.05
Pre-primary Classes	5669	3214	0326	3.70	.07

* p < .05

Several other variables made small contributions to R² to take the totals to 48% and 38% with respect to Reading Comprehension and Arithmetic, respectively

It was hypothesised that more variance related to Arithmetic would be associated with school-related variables than that for Reading Comprehension. It did not turn out to be so. In both Tables 13 and 14, the percentage variance attributable to independent variables explored in this study remained lower for Arithmetic. It may be mentioned that the standard deviation of the distribution of scores in arithmetic was smaller than for the test in language, indicating lesser variability, in any case in achievement in Arithmetic

¹² The statistic was very close to the medians for all States which were 6.4 and 7.9 respectively.

For considering the importance of a variable vis-à-vis the differences in school means, consistency in their contribution to R^2 was kept in mind. If F values for both R^2 were significant, the reliability of its contribution was rated high. None of the variables in Punjab measured up to this standard. Only 'Facilities for Pupil' came close to it. Although, administratively, the schools were not different from each other, 94% were administered by the government; very few were newly opened but they did seem to differ in the kind of physical facilities they had. For example, half the school had a separate room for the headmaster, 58% had separate urinals for girls. It was likely that the schools had managed different levels of facilities -- physical (or related to academic work) -- with the help of the local communities.¹³

Both the t 's were negative. Could it be that some schools paid more attention to buildings and physical facilities and less to making use of them?

Other variables that contributed a significant increment to R^2 related to Reading Comprehension were 'Age of the Headmaster', 'Teachers Untrained' and the school admitting only boys or girls. Older headmasters seemed to manage better learning on the part of their pupils. Both R^2 were positive and the one with Reading Comprehension was not too small.

The contribution of 'Teachers Untrained', too, could be explained as the percentage reported by headmaster was negligible (1.1%). The same can be said with regard to the schools being co educational. For Arithmetic, no variable other than 'Age of the Pupil' made a statistically significant contribution to R^2 . In general, it may be said that none of the variables explored had a very significant impact on differences between schools, the contributions were small but the same added up to reasonable large totals.

There was balance between the variance related to home and school variables in the State.

13 Eight per cent schools reported having a Parent Teacher Association.

Table 16-A

INTER CORRELATIONS OF PUPIL-RELATED VARIABLES AND ACHIEVEMENT

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
1	100	-00	-02	-12	02	13	-27	-07	-19	-05	-04	-10	01	04	09	-07	-20	-07	-02	-03	-22	-07	-03	-08	-07	04	07	-05	-19	-10	-11
2	100	-07	08	-06	07	04	-17	-18	05	-03	-09	01	-02	-13	-06	-11	-04	-01	04	-10	-08	-06	-07	-07	-05	-10	-07	-12	-10	-07	
3	100	-05	06	01	-04	06	06	11	07	05	01	03	-04	-02	05	02	05	-02	05	05	05	06	06	03	07	08	09	07	04	-00	01
4	100	-41	02	06	-15	-11	12	-14	-09	-06	-08	-08	06	-04	-11	-12	-08	-08	04	08	13	10	04	09	06	02	13	-47	-06	-02	
5	100	-04	-06	09	18	-15	11	08	06	08	03	05	04	03	01	08	02	-04	-07	-03	-01	-02	-04	-02	-04	-02	-06	-22	05	00	
6	100	-05	-08	-08	-01	-12	-06	-06	-08	-08	-02	-06	-05	-03	-03	-02	03	-02	-04	06	00	02	06	-03	-06	-03	-06	-07	-03		
7	100	02	11	01	13	09	08	-02	03	08	03	06	03	17	04	04	05	07	01	02	02	05	11	27	00						
8	100	-46	-12	14	26	04	07	07	09	26	16	05	01	28	10	15	11	14	11	12	10	15	54	20	16						
9	100	-15	11	21	05	-00	01	06	22	16	04	08	26	16	21	16	15	11	12	12	21	15	19	15							
10	100	-03	00	-02	04	-02	02	-06	-04	03	-03	-05	02	03	03	03	08	07	02	03	11	-03	-07								
11	100	18	03	08	03	12	14	13	12	10	03	03	-02	04	06	04	07	06	-00	02	-01	02									
12	100	17	23	-07	17	19	15	14	09	18	05	13	05	15	07	13	12	12	12	12	17	67	05								
13	100	61	05	08	10	04	-01	-12	04	07	12	02	12	04	06	02	09	01	54	10											
14	100	02	10	10	07	09	-07	-01	-10	04	-02	04	-03	00	-10	03	-03	15	02												
15	100	14	00	00	-09	-11	-03	-01	06	05	01	07	07	02	07	-02	37	07													
16	100	06	04	-10	-06	01	-08	05	08	10	09	08	06	07	04	39	12														
17	100	39	14	08	12	09	09	06	09	01	05	04	09	16	16	55															
18	100	18	14	07	06	07	06	06	-01	04	05	07	10	10	45																
19	100	36	04	-07	-03	-12	-04	-11	-05	-01	-10	-00	-12	-06																	
20	100	06	-00	-06	-02	-06	-05	-02	-03	-05	-00	-05	-33																		
21	100	19	21	14	18	17	14	12	21	27	16	05																			
22	100	53	41	44	48	43	-47	54	20	10	12																				
23	100	62	43	56	47	45	97	28	19	14																					
24	100	43	48	42	58	80	21	10	14																						
25	100	50	46	55	47	18	19	12																							
26	100	53	51	59	18	13	09																								
27	100	64	50	18	16	08																									
28	100	47	14	15	05																										
29	100	28	18	16																											
30	100	16	16																												
31	100	18																													
32	100																														

INTER CORRELATIONS OF SCHOOL-RELATED VARIABLES AND ACHIEVEMENT

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
1	100	-41	01	-26	17	-17	-12	-08	11	-07	01	05	-18	04	-11	-15	-23	-08	-06	-33	-09	-15	08	-08	09	-11	11	16	-16	-05	-05	09	-20	-16	-10	-12	-15	-11	-20
2	100	39	47	-14	-16	12	-15	-10	-04	-14	-04	10	-06	-27	13	-07	-04	06	02	-16	-03	00	-03	07	10	04	06	29	26	06	12	23	24	20	14	11	11	25	
3	100	20	-10	04	-05	-07	-04	-10	-02	-06	04	05	04	09	05	18	-02	00	-04	06	-17	-08	11	04	-08	-09	18	16	12	10	11	13	12	00	14	11	12		
4	100	-19	-05	09	-03	-19	05	03	02	09	01	-12	-11	02	11	07	12	-10	00	01	10	-07	-12	11	04	02	25	15	01	00	01	-12	06	-00	-04	00			
5	100	-21	-08	-18	18	12	06	-02	04	20	-18	-14	23	08	14	-13	-34	02	23	-00	11	06	34	35	-13	06	-04	-07	-10	-14	-00	-02	10	18	-12				
6	100	03	68	-39	10	-01	06	-24	-11	60	34	09	08	10	07	12	05	-15	-10	08	-02	-11	-16	-05	-24	-08	03	15	07	08	10	12	03	14					
7	100	03	-02	-06	-04	05	-15	-09	02	04	03	16	01	05	09	-05	04	05	01	03	-02	05	07	-08	-07	-20	-03	02	-18	-13	-11	-16							
8	100	-57	08	-01	05	-18	-07	57	50	12	17	-19	20	-13	07	-22	-18	-06	-02	-07	-12	-13	-20	-06	07	18	19	08	06	11	-02	19							
9	100	-04	-01	-04	19	11	01	-87	-07	-10	02	-21	08	05	06	19	03	01	-00	-00	08	-06	04	05	-02	-07	06	03	01	10	-03								
10	100	31	15	-07	-02	04	08	21	37	14	07	07	04	-06	20	11	04	04	-01	06	05	-30	04	21	-07	-17	06	-05	01	14									
11	100	01	04	-19	-03	02	13	22	00	01	-02	08	03	-07	02	00	13	07	-03	04	-23	-06	08	-15	-09	03	-14	-11	02										
12	100	-27	09	07	10	-04	05	04	-14	07	01	01	10	16	01	01	-02	-13	-11	-10	13	05	17	03	07	01	11	09											
13	100	-08	-22	-15	02	-00	06	03	-09	00	-00	-01	03	07	12	14	18	37	29	08	19	11	18	20	11	08	18												
14	100	-04	-14	00	08	16	-00	05	11	-17	05	-03	-15	18	08	-20	-20	-08	-25	-18	-06	-18	-19	-14	-26	-16													
15	100	00	07	10	10	21	-08	21	-26	-19	-03	-01	-17	-22	-08	-20	-04	05	21	11	14	04	11	01	19														
16	100	10	13	-01	19	-03	-06	-08	-18	-01	01	-07	-05	-07	08	-05	02	09	12	03	-01	09	-02	11															
17	100	16	11	19	07	01	-05	01	09	02	17	00	-11	05	-17	-09	18	07	-07	04	06	00	16																
18	100	07	13	05	28	-09	00	04	09	05	-01	-02	-00	-22	14	06	00	-07	-06	-12	-06	05																	
19	100	36	19	03	-14	-01	12	05	06	04	-03	05	-02	-03	07	-02	-02	-10	-03	-06	04																		
20	100	03	08	-33	09	-19	13	-10	-09	-05	09	06	-18	-07	-15	-14	-27	-16	-22	-10																			
21	100	-10	08	36	16	-01	13	03	-04	-14	07	-05	-02	-01	-10	-09	-20	-07	-02																				
22	100	-17	00	13	-05	-03	-11	-06	-01	-05	-18	-03	-08	-13	02	-02	-03	-05																					
23	100	08	-01	04	02	09	14	17	05	04	-03	08	17	10	12	26	00																						
24	100	-06	17	-01	-08	10	-05	-20	-08	-10	-04	-15	-06	-23	-09	-09																							
25	100	-03	19	14	14	07	-02	07	16	08	09	02	-01	06	15																								
26	100	04	04	15	06	-03	05	15	11	14	14	14	14	16																									
27	100	87	-01	13	-10	-01	05	-04	-06	06	-04	03	03																										
28	100	08	05	-02	09	06	00	05	11	05	13	05																											
29	100	15	01	03	14	07	28	05	06	13	13																												
30	100	17	17	20	09	13	11	22	20	18																													
31	100	-08	-04	01	12	08	11	07	-03																														
32	100	62	52	57	58	52	57	63																															
33	100	68	52	64	52	54	97																																
34	100	55	58	51	55	83																																	
35	100	63	62	69	57																																		
36	100	63	65	67																																			
37	100	81	55																																				
38	100	59																																					
39	100																																						

Rajasthan

In addition to the capital city of Jaipur, the State of Rajasthan was divided into five other regions from which districts of Udaipur, Kota, Jaipur, Churu and Jodhpur were selected in the first step of sampling. Two hundred and seventy-four schools were identified and a sample of nearly 4,000 students was planned. But the State coordinating authority could not carry out the work in Churu, and the entire sample of 24 schools having an estimated number of 432 pupils was dropped.

Table 17.1

SAMPLES PLANNED AND OBTAINED

Region	No. of Schools		No. of Pupils	
Capital City	22 ¹	24 ²	550	360
Udaipur	55	55	775	457
Kota	46	54	682	589
Jaipur	53	48	663	325
Jodhpur	74	54	958	520
Total	250	235 ¹	3628	2251

The number of schools and pupils were distributed over the regions so as to make it a self-weighted sample. The imbalance in ratios between obtained and planned schools or pupils in any region would affect the State averages, that is, in case there were significant differences in the achievement of children belonging to different regions. The two regions with minimum and maximum coverage of pupil samples were Jaipur (49%) and Kota (86%), the aggregate means of these districts not being very different from each other, this imbalance was not likely to have affected the State mean.

A big difference in actual attendance and enrolment was indicated by the availability of 62% of the expected

pupil sample from 94% of the schools. The average enrolment in Class IV in urban areas according to the Fifth All India Educational Survey conducted in 1986 was 33. It is not clear why only 15 pupils, on the average, were available in the city of Jaipur. More than the allocated number of schools were approached to make up 62% of the expected number of pupil sample.

The representativeness of the sample was checked again by comparing some of the statistics obtained from this set of data with those reported in the Fifth All India Educational Survey of 1986.

Table 17.2

SAMPLE AS COMPARED TO THE POPULATION

Variable	Percentage	
	1986 Survey	Sample in the Study
Primary (only) Schools	76.7	67.3 ¹
Girl Students	28.0	27.3 ³
Scheduled Caste Students	16.7	13.1 ⁵
Scheduled Tribe Students	10.5	14.1 ⁵
Women Teachers	23.4	25.1 ⁶
Trained Teachers	84.1	86.4 ¹

A smaller percentage of primary (only) schools was noticed in the sample. The difference of 9% could easily be due to upgrading of a large number of schools in the State. The slightly lower percentage of girls could be due to the higher rate of absenteeism among girls. The difference, in the same direction, was larger for SC pupils. As the survey statistics were based on enrolment, it would include unwilling pupils or children of unwilling parents who were enrolled but did not attend school. The number of ST pupils could have increased. Interestingly, the combined statistics of the SC/ST pupils in the sample were comparable to the corresponding figure in the survey. With caste groups frequently agitating for change in their status, the reality may be near the *status quo* in the last five years.

1 The number planned

2 The number retained

3 Pupil data were made available for 242 schools, data from seven schools was dropped for one reason or the other.

Source

4 The School Questionnaire

5 The Pupil Questionnaire

6 The Teacher Questionnaire

Small increases in the percentage of women or trained teachers were in the expected direction. In fact, the differences in the desired direction were smaller than in several other States.

There was no reason to conclude that the sample of pupils and schools for which data were available was biased in any particular way.

The Tests in the State

Rajasthan participated both in development of the first drafts of the tests as well as the try-out of the material. As the State used the tests in Hindi, translations were not involved.

Table 17.3

DIFFICULTY VALUES OF ITEMS IN VARIOUS TESTS

Pass Percentage	Auth	RC(P)	RC(S)	WK	AW	SS	Spell
10 - 19		2					
20 - 29	2	-			2		7
30 - 39	9	3	1		3		7
40 - 49	12	17	3	16	7	4	7
50 - 59	9	15	9	17	8	12	3
60 - 69	7	7	2	6	3	1	1
70 - 79	1	-	1	1	1	1	-
Median	47.0	49.5	53.9	51.9	49.5	53.7	37.1

With the exception of the test in spelling, all others seemed to have reasonable difficulty values. The children in Rajasthan seemed particularly poor in this skill. It is likely that emphasis on skills involved in writing is delayed in the State. The scores on two other tests, namely, selecting appropriate word and identifying the correct construction of a sentence, would be influenced more easily by exposure to reading and listening. Spellings are learnt specifically in the classroom.

The items were very well balanced around the 50% pass percentage: the Discrimination Indices were quite high with, median values varying between 54.5 to 75.3. The items on the test on spelling had the largest discrimination values, separating the high achievers from low achievers very clearly.

The Groups in the Study

The Pupils

Of the 2,251 pupils of Class IV that responded to the test battery, only 64% were from the rural areas. According to the enrolment statistics of 1986, the rural group in primary classes was 75% of all the children attending Classes 1 to V. The percentage in this sample could be

lower because of a somewhat biased representation of schools. The enrolment statistics could also be inflated. Urbanisation during these five years could be contributing to some of the difference. The girls were only 27% of the sample. The average age of these children was 10.2 years. Seventy per cent children belonged to 'Others', 13 and 14%, respectively, to SC and ST groups, the BC group was a small 3%. Only 14% pupils came from small families of one or two children: the rest were nearly equally divided over 3-4 or more than four children families.

Thirty-four per cent fathers and 62% mothers were illiterate. Another 20% fathers and 17% mothers had studied up to the primary level, on the other side, 12% fathers and 2% mothers had gone to college. The percentage of graduate fathers was the highest in Rajasthan. Forty-eight per cent fathers were farmers, nearly 8% were either unskilled workers or were unemployed. Ten per cent fathers were professionals or had high-salared jobs.

Approximately 30% children had attended some kind of pre-school, 46% said they spoke some language other than Hindi, which could be Marwari or Rajasthan. Sixty per cent children could attend school regularly, a negligible one per cent said they had to miss it frequently. More than 40% families required their children to help with domestic and other family-related work for two or more hours every day. Less than 50% children received help from the family in doing their homework, 12% said they had some place where they could sit and study.

Seventy-five per cent children said they had most of the books, only 5% had few books, the comparable percentages for other study material were 69 and 10.

A newspaper was received in 29% of homes, and magazines in 26%. One third of the homes had some books but more than 50% children said they read something other than textbooks.

The mothers of a large number of children were illiterate. The percentage of illiterate fathers was also on the high side, but so was the percentage of graduate fathers. More than 45% did not speak at home the language through which they learnt at school. Quite a few children read books other than their textbooks.

The Teachers

Of the 418 teachers of primary classes in Rajasthan, 77.5% were teaching in rural areas, only 25% were women. Sixty-eight per cent could be considered young, being less than 35 years of age; only 10% were older than 50 years, indicating rapid expansion of education in the last 10 to 15 years. Corresponding to the age, 43% were newly recruited, their total teaching experience being less than five years, 15% had taught for more than 20 years.

The proportion of graduate teachers in Rajasthan was a high 52%, next only to that in Arunachal Pradesh⁷, another 30% teachers had passed their higher secondary examination. Less than 2% teachers were non-matriculいた. Corresponding to the high percentage of graduates, 38.5% also had a B Ed degree, including 15% who had gone through a four-year comprehensive programme of general-cum-professional education. A large majority of 48% had received two years of Junior Basic Training, 6% teachers did not respond to the question, they could be untrained⁸. Thirty-eight per cent teachers said they had received some in-service training.

More than half the teachers lived very close to their schools needing very little time for travelling. Only 2.4% required two or more hours every day to travel to and from their place of work.

The teachers were quite conservative in that 92% had not tried any new teaching practices but they felt that such experimentation was likely to improve both the interest and achievements of pupils. Only 41% teachers said they often used material other than the textbooks in teaching their students, 14% rarely used anything besides books. Twenty-eight per cent had never developed any material themselves. Of the rest, 22% said they had developed plenty of teaching aids; 60% had involved even their pupils in this activity.

Twenty-two per cent teachers carried out monthly tests but 70% evaluated their pupils 2-3 times a year, 8% did it only once a year. Thirty per cent teachers made restricted use of feedback from evaluation, only 23% used it for diagnosing weaknesses in teaching-learning and for promotion, too. Eighty-eight per cent teachers checked homework regularly. Students asked questions often in 70% of the classroom.

The nearly one-third of the teachers did not have copies of the textbooks and borrowed the same from the pupils, probably on the spot. Twenty-five per cent teachers did not have easy access to a Hindi language dictionary.

The teachers in Rajasthan had a better educational background, more than 50% being graduates. But a large number had probably gone through a course of professional education meant for teachers of secondary classes. They kept more to the known practices of teaching. One-third of them did not have their own copies of the textbooks, a fairly large percentage did not have easy access to a dictionary.

The Headmasters

Forty-six per cent of 248 headmasters who responded to the School Questionnaire had a B Ed degree, 10% were untrained. Of the rest, 24% had two years of Junior Basic Training. They were, on the average, quite young, 45% of them being less than 35 years in age. The proportion who had taught for less than five years was also the highest in the country – 26%. Half of them had been headmasters for less than five years.

In brief, more headmasters in Rajasthan were graduates than anywhere else, but they were not an experienced lot.

The Schools

Eighty per cent of the schools in the sample were in rural areas, half of these were managed by the State government and another 35% by local bodies. The percentage of private schools was also a high 15%, smaller only to that of the neighbouring State of Gujarat. More than one-third of the schools had been opened in the last ten years or so.

The percentage of middle and secondary schools in the sample were quite high (33%) but 90% schools were co-educational, pre-primary classes were attached to one-third of the schools.

Sixty per cent of the schools in Rajasthan had a room for the headmaster,⁹ but a common room for the teachers existed in only 17% of them. Nearly two-thirds of the schools had the facility of drinking-water but separate urinals for girls existed in 28% of the schools only.¹⁰

Only 20% schools had Book Banks; the average number of books in the school library was 305.

There seemed to be two definite trends regarding 'No Detention Policy' in the State; 45% schools did not detain children up to Class III, and another 11% promoted them up to Class IV regardless of what they could or could not learn. On the other hand, 32% schools¹¹ said they did not observe this practice at any stage, the 5% that did not respond to this question could also be detaining non-achieving children right from the beginning.

Operation Blackboard had not touched 72% of the schools as yet.¹² A PTA existed in only 39% of the schools, and 14% of them called several meetings during the year.

7 It is not being compared with that in the city of Delhi (70%).

8 The headmasters reported 13.6% teachers to be untrained.

9, 10 & 12 This is to be seen in the light of a high percentage of middle and secondary schools.

11 Private and private aided schools were 15%.

The sample of school in Rajasthan had a fairly large number of middle and secondary schools. There were several private and private aided schools. The facilities in the schools could be rated as average.

Achievements of Pupils

Data obtained from 2251 pupils of Class IV were analysed. The overall score was nearly 50% and with the exception of the test on Spelling. Average scores on all other tests varied around 50%. The lowest averages, as in most other States, were on tests of arithmetic and spellings. The skills involved in these two tasks are more specific to teaching-learning in school. When compared to other tests, the achievement on spelling was particularly low. It is likely that less emphasis is laid on it up to Class IV.¹³

Table 17.4
ACHIEVEMENTS OF PUPILS

Test	Arith (40) ¹⁴	RC(P) (44)	RC(S) (16)	W K (10)	A W (24)	S S (18)	Spell (25)	Total (207)
Mean	19.3	22.0	8.6	21.5	11.8	9.9	9.6	102.7
SD	8.3	10.4	4.8	10.5	5.5	5.0	7.2	
Mean as Percentage	48.2	50.0	53.7	53.7	49.2	55.0	38.4	49.6
KR-20	0.88	0.92	0.89	0.94	0.85	0.88	0.93	
All India Median	41.2	45.4	43.1	49.5	41.7	57.8	42.8	45.2

The scores on RC(S) and SS were relatively high in Rajasthan. In several other States, the scores on RC(S) as also on AW were lower than on other tests, and the format of the items, being common to both the tests, was considered to be partly responsible.

All the States were requested to administer the test battery to a small sample of pupils studying in Class V. The purpose was to assess the gain in one academic year. Rajasthan returned data for 425 pupils of Class V.

Table 17.5

MEAN ACHIEVEMENTS OF PUPILS — CLASSES IV AND V

Class	Arith	RC(P)	RC(S)	W K	A W	S S	Spell	Total
IV (2251)	19.3	22.0	8.6	21.5	11.8	9.9	9.6	102.7
V (425)	20.2	21.1	7.9	22.3	11.2	10.7	10.6	104.0

Only in four out of seven tests, the pupils of Class V had a mean score higher than that of children in Class IV. The difference remained less than or equal to 1 point only. It may be recalled that nearly 80% schools de-

tained non-achieving children at some stage during Classes 1 to III.

In three other tests, the average achievement was even lower for Class V pupils. Although there was a small difference in favour of the higher grade in the aggregate, the total picture can best be described as a 'no-difference' situation.

At the time of drawing the sample of schools, each State was divided into educational regions¹⁵ and a district was chosen at random from each region. The purpose was twofold. It was felt that such a procedure would ensure representativeness of the sample; secondly, comparisons between regions would become possible. This would help educational planners and administrators to identify regions which need more attention. The capital city in the case of all the States was included as a region. In addition to Jaipur, the State was divided into five regions, but the tests were not administered in one of the regions which was considered as a disturbed area.

Table 17.6

ACHIEVEMENTS OF PUPILS — REGION-WISE

Region	Arith	RC(P)	RC(S)	W K	A W	S S	Spell	Total
Capital City(360)	14.9 6.6	18.4 9.1	8.0 4.4	18.7 10.2	12.5 5.1	9.6 5.4	9.2 6.9	91.3
Udaipur(457)	20.0 8.2	22.7 11.2	8.9 5.0	23.5 9.3	11.6 5.1	10.2 4.7	10.9 6.5	107.8
Kota(589)	20.3 8.2	23.5 10.0	9.3 4.6	22.3 9.9	12.6 5.6	10.0 5.0	7.9 7.3	105.9
Jaipur(325)	20.1 8.2	22.9 10.2	8.5 4.6	19.9 11.4	11.9 5.8	10.0 4.8	11.5 7.3	104.8
Jodhpur(520)	20.4 8.6	21.6 10.6	8.0 4.9	22.0 11.4	10.5 5.3	9.9 5.2	9.5 7.5	101.9

The aggregate mean of the pupils of the capital city was much lower than in any other region or the State as a whole, which itself was affected because of 14% of the sample being from the capital city. Without the sample from the capital city, the State mean would be around 105. It can thus be said that the achievements of Kota and Jaipur were around the State average, with Udaipur and Jodhpur having slightly higher and lower aggregates, respectively. Udaipur might have gained, in the long run, because of it being the seat of the State Institute of Educational Research and Training of Rajasthan.

Lower means that the State averages had been noticed in some other capital cities as well. It could be because of children of higher-socio economic strata studying through the medium of English in private or private aided schools. This group of children came from families

¹³ The maximum possible score.

¹⁴ In another context, several primary school teachers had said that 'Dictation' was not given till Class IV. This implied that pupils learnt to write by copying rather than by recalling structure of words.

¹⁵ In some States, administrative regions replaced educational regions.

which have better resources and are more concerned about the achievement of their children at school. The schools are also likely to have better facilities.

Achievements on two of the tests, namely, Arithmetic and Reading Comprehension (paragraphs), were also studied objective-wise, and in case of Arithmetic, topic-wise too.

Table 17.7

ACHIEVEMENT IN ARITHMETIC — OBJECTIVE-WISE

Objective	Mean	SD	Mean as Percentage
Knowledge (19) ¹⁶	9.3	4.0	48.9
Understanding (12)	6.0	2.8	50.0
Application (9)	1.1	2.4	45.5
Total (40)	19.3	8.3	48.2

No difference on mean achievement on items categorised under Knowledge and Understanding had been observed in other States as well which could be due to little difference between these two objectives at this elementary level. The percentage score on application items was quite satisfactory.

Table 17.8

ACHIEVEMENT IN ARITHMETIC — TOPIC-WISE

Topic	Mean	SD	Mean as Percentage
Time (3)	1.7	1.1	56.7
Factors and Multiples (7)	3.1	1.7	44.3
Fundamental Operations (12)	5.6	2.9	46.7
Weights and Measures (4)	1.5	1.0	50.0
Fractions (5)	2.0	1.4	40.0
Decimals (7)	3.6	1.7	51.4
Unitary Method	1.8	1.0	60.0
plus Others (3)			
Total (40)	19.3	8.3	48.2

On the topic-wise division, the patterns were very similar over the States, with children getting the maximum score on Unitary Method and Time. Both these topics had the advantage of 'recency'; the former probably also had questions very similar to the ones routinely practiced in the classroom. Low scores were observed on Factors and Multiples as well as Fundamental Operations, the latter had several questions involving understanding.

¹⁶ The maximum possible score.

¹⁷ This includes,

(a) deriving the meaning of difficult words from the context, and

(b) relating things at a simple level.

¹⁸ This includes identifying the message or the central idea and the title of the write-up.

Table 17.9

ACHIEVEMENT IN READING COMPREHENSION—OBJECTIVE-WISE

Objective	Mean	SD	Mean as Percentage
Noting Detail (17)	9.4	4.4	55.3
Simple Comprehension ¹⁷ (13)	6.8	3.6	52.3
Inference ¹⁸ (14)	5.8	3.2	41.4
Total (44)	22.0	10.4	50.0

The decreasing pass percentages on the three objectives were in the expected direction. It was encouraging to note that a fairly large percentage of pupils could read with simple comprehension.

The differences in achievements of pupils, when divided over location, gender and caste were, also studied.

Table 17.10

DIFFERENCES IN ACHIEVEMENT — LOCATION-WISE

Test	Location	Mean	SD	t
Arith	U	17.8	7.8	6.49
	R	20.2	8.4	
RC(P)	U	21.0	9.6	3.40*
	R	22.5	10.8	
RC(S)	U	8.5	4.3	39
	R	8.6	6.0	
W.K	U	20.3	10.1	4.10
	R	22.2	10.7	
A.W	U	12.1	5.1	2.29*
	R	11.6	5.7	
S.S.	U	10.1	5.0	83
	R	9.9	5.1	
Spelling	U	9.7	6.8	.69
	R	9.5	7.5	
RC (total)	U	29.5	12.8	2.64*
	R	31.2	14.8	
T(5 + 6 + 7)	U	32.0	13.5	1.51
	R	31.0	14.8	

Urban - 804 Rural - 1447

$p < .05$, * $p < .01$

Rural children scored more in three out of seven tests; all the differences were statistically significant. The urban group had a slightly higher score on the choice of an appropriate word in writing. As this competency would be influenced by listening to other persons as well as exposure to media communications, print or audio, the urban children were at an advantage. The maximum difference was on the test in arithmetic, achievement in which was more dependent on what was taught in the school. However, there was no difference in the scores on spelling -- another set of tasks dependent more on teaching in the school. The rural children had an aggre-

gate score of 104.5 in comparison with 99.5 only of the urban children

Table 17.11

DIFFERENCES IN ACHIEVEMENT — GENDER-WISE

Test	Gender	Mean	SD	t
Arith	B	19.8	8.4	4.24*
	G	18.1	8.0	
RC(P)	B	22.2	10.5	1.72
	G	21.4	10.3	
RC(S)	B	8.6	4.8	32
	G	8.5	4.6	
W.K.	B	21.9	10.5	3.05*
	G	20.4	10.4	
A.W.	B	11.7	5.5	1.22
	G	12.0	5.3	
S.S.	B	10.0	5.1	32
	G	9.9	4.9	
Spelling	B	9.6	7.3	06
	G	9.6	7.0	
RC (total)	B	30.8	14.2	1.38
	G	29.9	13.9	
T (5+6+7)	B	31.3	14.5	32
	G	31.5	13.8	

Boys - 1637, Girls - 614
p < .01

The differences between boys and girls followed nearly the same pattern as the urban/rural divide, with boys scoring higher than the girls. Two of the differences, i.e., on Arithmetic and Word Knowledge, were statistically significant. The two aggregates totalled to 103.8 and 99.9, respectively.

Table 17.12

DIFFERENCES IN ACHIEVEMENT — CASTE-WISE

Test	Group	Mean	SD	t
Arith	SC	18.3	8.7	9.83*
	ST	19.5	8.5	
	BC	14.8	8.1	
	Others	19.7	8.1	
RC(P)	SC	19.6	10.1	16.56*
	ST	21.6	10.7	
	BC	15.9	9.8	
	Others	22.8	10.3	
RC(S)	SC	7.9	4.8	16.65*
	ST	8.1	5.3	
	BC	5.5	5.2	
	Others	9.0	4.6	
W.K.	SC	18.6	11.3	16.29*
	ST	20.9	11.3	
	BC	17.0	10.8	
	Others	22.4	10.0	

Test	Group	Mean	SD	t
A.W.	SC	10.3	5.5	17.30*
	ST	10.6	5.8	
	BC	11.1	5.8	
	Others	12.3	5.3	
S.S.	SC	8.9	5.0	9.85
	ST	9.5	4.9	
	BC	8.4	5.4	
	Others	10.3	5.0	
Spelling	SC	8.0	7.5	9.62
	ST	9.0	7.5	
	BC	7.6	7.2	
	Others	10.1	7.1	
RC (total)	SC	27.6	13.9	18.94*
	ST	29.7	15.0	
	BC	21.3	14.1	
	Others	31.7	13.7	
T (5+6+7)	SC	27.3	11.3	17.47*
	ST	29.2	15.0	
	BC	27.1	15.1	
	Others	32.7	14.0	

SC - 294 ST - 317 BC - 71 Others - 1569
p < .01

The composition of the sample on caste lines was as follows, Others -- 70%, BC -- 3%, ST -- 14%; SC -- 13%. Their aggregate means were in the same order, the largest group 'Others' having the highest mean of 106.6, and the smallest of Backward Classes having the lowest average of 80.3. Fourteen per cent STs had an aggregate of 99.2; and SCs, the aggregate score of 91.7. Although not as neatly as in Rajasthan, the majority group having the highest average score had been noticed elsewhere as well. Could it be that, on the one hand, the curricular experiences may become more relevant and, on the other, greater understanding may develop between the teacher and the taught, both these may work positively for a better achievement of the largest group.

Differences on all the tests with the exception of one small deviation followed the same ranking (Others/ST/SC/BC) and all were statistically significant.

Factors related to Achievement of Pupils

Data regarding the home background of the pupils, educational environment in their homes and facilities available for better learning, and personal data regarding age, gender, etc., was regressed against two criteria, namely, scores on Reading Comprehension (total) and Arithmetic. Before this analysis, data on groups of variables were combined to obtain composite scores on 'Home Background', 'Facilities for Learning' and 'Educational Environment at Home'.

The regression coefficients for the variables entered in the three composite scores are given below

Home Background

	RC	Arith
Location	3.05	2.34
Father's Occupation	.28	-.16
Caste	1.28	.60
Father's Education	.62	-.07
Mother's Education	.02	.07
Number of Siblings	.75	.33
R	.15	.16

$p < .01$

'Location' and 'Caste' had consistently statistically significant regression coefficients that would enhance the relationship with achievement. The regression coefficient on parents' education had opposite signs with the two criterion variables. One of the regression coefficients was statistically significant but could not be explained easily.

Facilities for Learning

	RC	Arith
Attended Pre-school	-3.23	-2.45
Place for Study	1.35	-.25
Help in Homework	.02	-.79
Availability of Textbooks	.58	-.53
Availability of Study Material	-.20	.13
Helping Household	-.55	-.38
Regularity in Attendance	-1.76	-.11
R	.13	.16

$p < .05$, * $p < .01$

The only variable which had consistently significant regression coefficients in the composite score which would have the maximum relationship with achievement was 'Attended Pre-school', but it also had negative signs. It was pointed out by some other State that several of these children attended ICDS programmes which mainly provide free meals and preventive medical care. In several places, the programmes have little educational input.

It was, on the whole, a difficult picture to explain.

Educational Environment at Home

	RC	Arith
Get Newspaper	-1.50	-1.69
Get Magazines	-.87	-.34
Books at Home	-.18	-.30
Read Books	2.65	.35
R	.11	.11

$p < .01$

Except for the last variable, 'Read Books', which had a significant regression coefficient in the composite score that would maximise R, the picture was difficult to comprehend/explain. The signs of regression coefficients of the variable were consistent.

The three composite variables as obtained against reading comprehension and five others were regressed with achievement in the two criterion variables, separately. Their contribution to R^2 are given in the following tables.

Table 17.13(a)

CONTRIBUTION OF PUPIL-RELATED VARIABLES TO ACHIEVEMENT IN READING COMPREHENSION

Variable	R	R ²	Increment in R ²	F	p
Word Knowledge	.5046	.2546	.2546	768.18**	.51
Educnl Environ	.5096	.2597	.0051	15.41*	.10
Home Background	.5131	.2633	.0036	10.99	.15
Similar Language	.5147	.2649	.0016	5.02*	.03
Facilities for Learning	.5167	.2670	.0020	6.22*	.12
Time Watch TV	.5167	.2670	.0001	0.18	.02
Age	.5168	.2671	.0001	-	.00
Gender	.5168	.2671	.0000	-	-.03

$p < .05$, * $p < .01$

Table 17.13 (b)

CONTRIBUTION OF PUPIL-RELATED VARIABLES TO ACHIEVEMENT IN ARITHMETIC

Variable	R	R ²	Increment in R ²	F	p
Word Knowledge	.4220	.1781	.1781	487.39	.42
Gender	.4266	.1820	.0039	10.63	-.09
Time Watch TV	.4298	.1848	.0028	7.64	-.06
Similar Language	.4327	.1872	.0025	6.82*	.03
Facilities for Learning	.4353	.1895	.0023	6.31*	.10
Home Background	.4367	.1907	.0012	3.34	.10
Age	.4377	.1916	.0009	2.55	-.03
Educnl Environ	.4378	.1917	.0000	-	.04

$p < .01$

The differences in the scores achieved on the test on Word Knowledge made the maximum contribution to R^2 for both the criterion variables. With very few exceptions, this has been the pattern in most States. The other variables which made statistically significant contribution to R^2 for both the criterion variables were 'Similarity of Language',¹⁹ and 'Facilities for Learning', 'Home Background' followed very closely. 'Educational Environment at Home' and 'Gender' exchanged second and last posi-

¹⁹ The language spoken at home being other than Hindi was reported by 46% of the children.

tions for the two criteria. While the former turned out to be significant for achievement in language, the latter had an effect on learning arithmetic. Availability of newspapers, magazines and books could have a direct effect on a child's interest in reading, it also indicated a family that presented a model (for reading) to the child. But the significance of 'Gender' with respect to learning arithmetic could only reflect a societal bias against girls.

The significant contribution to R^2 of 'Watching TV' to achievement in arithmetic was not understood. It had a negative small r of $-.06$. It could be related to the economic status of the family for which no direct measure was available.

The variables related to the pupils as individuals including their home background seemed to have greater impact on achievement in language as compared to arithmetic. The latter was probably learnt more in school while the former, being highly related to skills in listening which are continuously acquired at home and in the society at large, is influenced more by the home background variables.

The relationship of home background variables with achievement of pupils was studied in Tables 17.13(a) and 17.13(b). The R^2 for Reading Comprehension was the same as the median for all the States and it was higher for Arithmetic only by a small margin. Thus the impact of the home and the pupils' ability could be said to be on the expected lines. A similar exercise with respect to the school-related variables was also undertaken, in which information available about the background and the experience of headmasters along with the policies and practices being followed in schools were regressed against achievement on the two criterion variables. Teacher-related variables were not used in this analysis.

The range of school means was smaller than that obtained for the scores of pupils, only by a small margin. The standard deviation of 210 school means was 6.9 compared to 8.3 for the distribution of scores of more than 2,200 pupils.²⁰

Table 17.14(a)
CONTRIBUTION OF SCHOOL-RELATED VARIABLES
TO ACHIEVEMENT IN READING COMPREHENSION

Variable	R	R ²	Increment in R ²	F	r
Years of Existence	1245	.0155	.0155	3.27	-.12
Books in the Library	.1574	.0248	.0093	1.97	-.12
Admn. of School	.1898	.0360	.0113	2.41	.11
Facilities for Teachers	.2158	.0466	.0106	2.27	-.10

Although all the 31 variables given in the list at the

end of the report were regressed with the two criteria, as given in Table 17.14 (a) and (b) only those which contributed statistically significant increment to R^2 and a few more down the line were retained. Very few variables in Rajasthan survived this criterion. The total contribution to R^2 for Reading Comprehension was 9%, and for Arithmetic it was 18%. Both the values were lower than the median value for the country. When compared with R^2 , the values obtained with respect to differences among pupils, the variation between schools was smaller than between homes. Apparently, the schools did differ among themselves, half of them being managed by the State government, one-third by local bodies, and the rest being under private management. There were many middle and some secondary schools in the sample. They also differed on availability of physical facilities. One-third of them were even newly opened schools, but these differences did not seem to affect the achievements to any large extent.

Table 17.14(b)

CONTRIBUTION OF SCHOOL-RELATED VARIABLES
TO ACHIEVEMENT IN ARITHMETIC

Variables	R	R ²	Increment in R ²	F	r
Classes in School	1951	.0381	.0381	4.23	.20
Teaching Experience	2441	.0596	.0215	1.74	-.18
No Detention Policy	.2725	.0742	.0147	4.26	-.13
Facilities for Teachers	2938	.0863	.0121	2.71	-.16
Proportion SC/ST	3159	.0998	.0135	3.05	-.08
Experience as Headmasters	3319	.1102	.0104	2.37	-.01
Percentage Attendance	.3466	.1201	.0100	2.28	-.06

While pupil's-background-related variables explained more variance in Reading Comprehension as compared to Arithmetic, the position was reversed in the analysis with respect to school-related variables. The pattern was along the expected lines. It has been said earlier that learning in arithmetic was considered more specific to what went on in school while language was being learnt both at school and outside it.

None of the variables made a statistically significant contribution to R^2 in Table 17.14 (a). 'Classes in School' and the 'Teaching Experience' of the headmaster seemed to make some difference to the average score of the school on the test in arithmetic. It has been mentioned earlier that the percentage of middle and secondary schools in Rajasthan was quite high. The aggregate scores

²⁰ Both the statistics were higher than the respective country medians.

of pupils from the three categories of schools, i.e., primary, middle and secondary, were 105.6, 103.4 and 91.5²¹. But the averages differed more in the test for arithmetic, being 20.6, 18.8 and 14.2 as compared to 22.8, 22.1 and 18.9 for Reading Comprehension (para) leaving a significant R^2 for the former criterion variable.

The reason for the total 'Teaching Experience' contributing significantly may be arising out of the concern of the headmaster for the performance at the public examination, resulting in more attention and better teach-

ers for higher classes than for the primary section.²² More of the experienced headmasters could be keeping their eye on the results of public (including district-level) examinations than the ones with lesser experience.

While the school means did differ from each other, the variables responsible for the same could not be identified satisfactorily. Perhaps more elusive variables such as the involvement of a headmaster/teacher and the leadership provided were more important than the mere existence of physical or academic inputs.

²¹ Lower achievements by children of primary sections of middle and secondary schools as compared to those studying in primary (only) schools in some States had been noticed in some earlier studies as well.

²² '1' had a negative sign.

INTER CORRELATIONS OF PUPIL-RELATED VARIABLES AND ACHIEVEMENT

[illegible]

Table 17-B
INTER CORRELATIONS OF SCHOOL-RELATED VARIABLES AND ACHIEVEMENT

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39		
1	1	100	-05	13	05	20	-16	-02	-14	15	01	-01	04	01	04	-16	-02	-01	-09	-09	-06	-05	-12	-10	-07	-15	-08	04	04	05	-09	-12	-03	-02	-09	03	-05	-02	-4	-04
2	100	64	50	-15	00	-00	-13	21	23	03	10	-06	-07	02	11	11	12	12	21	23	05	02	00	03	-06	11	07	-11	07	-15	-10	-08	-02	-02	-01	-05	-04	06		
3	100		57	-17	-12	12	-13	-17	21	-09	05	-11	-05	-03	06	01	11	10	08	12	09	-05	-05	06	-10	17	14	-14	04	00	-18	-12	-07	-02	-02	-05	-05	-08		
4		100	-13	-06	-01	-08	-04	09	-04	03	-02	-15	-09	09	14	08	02	-02	14	03	-03	-09	01	-05	13	11	-05	13	11	-05	10	09	01	-02	05	02	01	-00	-05	00
5			100	-25	18	-17	25	03	04	-14	14	11	-24	-08	-08	-21	-26	-24	-26	-23	-15	00	-26	-08	10	12	15	-11	22	12	08	-00	09	-02	01	04	06			
6				100	-01	44	-10	-20	-00	-10	-21	-23	56	-03	15	16	22	36	14	10	17	09	13	08	-12	-10	-13	18	-07	02	10	10	-08	18	16	12	11			
7					100	02	08	14	-17	-25	-07	05	02	00	06	01	02	04	-05	-03	-06	09	-07	-04	-09	09	-04	-13	-04	-05	02	-02	06	02	07	06	01			
8						100	-21	-20	04	-00	-18	-11	26	04	24	14	29	27	07	18	14	05	20	02	-10	-08	-06	15	-10	03	10	09	07	18	09	14	10			
9							100	-17	-03	-05	12	11	-13	-13	-13	30	-15	-35	-39	-27	-06	-04	-15	-05	05	03	36	-24	09	20	12	-04	-10	-02	-03	03	08			
10								100	-16	-02	02	10	-13	03	14	09	07	01	19	04	-06	08	07	-10	-11	10	04	00	-08	-12	-10	-16	-08	-09	-03	-11	-12			
11									100	30	-06	-05	-01	-11	03	-03	05	11	01	03	-03	01	-08	-05	-02	-04	-06	10	-03	03	-04	-02	-01	-05	-02	-06	-03			
12										100	-21	-06	-02	04	01	09	-05	05	02	14	-04	-12	11	-00	-02	-08	-05	15	-03	08	-01	06	-02	-03	08	-10	01			
13											100	20	-07	-04	04	-07	-13	-22	-08	06	09	19	-06	08	06	09	19	-06	-08	-08	-04	04	01	-09	-05	-01	-04			
14												100	-06	-06	-06	-04	-10	-13	-07	-10	-16	02	-04	02	16	17	11	-08	-05	02	-01	-06	-07	-02	-04	-08	-02			
15													100	19	08	17	19	26	20	03	07	03	08	07	-10	-84	-07	19	02	00	06	05	03	10	02	09	06			
16														100	15	06	04	12	09	10	06	-11	13	-03	03	03	-05	17	-06	03	01	09	10	16	04	05	04			
17															100	06	09	07	39	22	12	11	20	01	01	02	04	03	-06	-01	-02	04	05	08	-05	02	-01			
18																100	12	27	16	27	23	03	28	-13	-03	-04	-14	18	01	-04	-06	05	00	03	01	-05	-02			
19																	100	27	17	01	06	10	05	-10	04	04	-09	-06	-01	-16	-12	-04	01	05	08	05	-10			
20																		100	08	23	09	11	12	08	01	-01	-15	21	-06	-09	-05	01	09	05	11	03	-04			
21																			100	23	13	02	19	-06	02	03	-03	08	06	-17	-14	-05	-06	-00	-07	-03	-12			
22																				100	15	08	34	04	05	06	-10	28	13	-07	-05	-00	07	02	01	03	-04			
23																					100	-09	44	-04	-05	-04	-03	05	-09	-13	-07	-03	04	00	-11	-02	-06			
24																						100	-04	06	02	02	02	16	-02	-04	-02	-07	-04	-07	-06	02	-04			
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Sikkim

On the basis of enrolment statistics of the Fifth All India Educational Survey of 1986, Sikkim was requested to administer tests to approximately 750 pupils to be selected from 56 schools. The State returned data from 51 schools. The number of pupils obtained was 1,085, many more than expected. In addition, data were also available for 44 pupils of Class V from 21 schools.

Table 18.1

SAMPLES PLANNED AND ENTERED IN ANALYSES

Region	No. of Schools		No. of Pupils
Capital City	6 ¹	8 ²	150
Rest of the State	50	43	600
Total	56	51	750
			1085

A much larger number than the one expected according to the statistics of 1986 pointed to a rapid growth of enrolment in the schools in Sikkim. The likelihood of higher average attendance was also there. This was in contrast to the situation prevailing in most other States where the obtained sample had been much smaller than the one expected on the basis of enrolment.

The ratio of the sample from the capital city and from the rest of the State changed from 1:4 to 1:5, this tended to reduce the State mean to some extent.³

To check the representativeness of the sample, some of the statistics obtained from this group were compared with those reported in the Fifth All India Educational Survey of 1986.

All the indices obtained from the sample in the study differed from those noted in the 1986 survey, some in the expected direction and others in the reverse. The increase in percentage of women or trained teachers was considered in the expected direction but the lower per-

centages of students belonging to the socially weaker sections were in the reverse direction. The differences could be due to higher absenteeism of these groups or forced enrolment where pupils remain on the registers but do not attend school. The percentage of schools having primary classes only was also substantially smaller. It is likely that a large number of primary schools had been upgraded. Even in 1986, Sikkim tended to have fewer primary (only) schools than most other States in the country.

Table 18.2

SAMPLE AS COMPARED TO THE POPULATION

Variable	Percentage	
	1986 Survey	Sample in the Study
Primary (only) Schools	71.3	47.1 ¹
Girl Students	44.9	40.7 ⁵
Scheduled Caste Students	6.1	2.7 ⁵
Scheduled Tribe Students	21.3	17.8 ⁵
Women Teachers	29.6	38.7 ⁶
Trained Teachers	19.7	67.5 ¹

The achievement of girls was higher than that of the boys, this was also the case for the small sample of SC pupils but it was partly set off by the lower average of ST pupils. The small deviations in the sample statistics, even if real, probably did not affect the means of the pupils (as a group) in the State.

The Tests in the State

Although the State joined a little late in the study, it managed to participate in the try-out of the tests. The English translations provided from Delhi were prepared to help the States to develop tests in their own languages. It was made clear that the English versions did not necessarily guide the level of difficulty of the language to be used. The Hindi version was to be consulted.

1 The number planned

2 The number obtained

3 See Table 18.6

Source

4 The School Questionnaire

5 The Pupil Questionnaire

6 The Teacher Questionnaire

by those who could do so (and a large number could). Their own judgement was to be used in selection of vocabulary, etc. by those who had to depend more on English. Sikkim, along with Nagaland and Arunachal Pradesh, used the tests in English, they were advised to modify them wherever considered necessary.

Table 18.3

DIFFICULTY VALUES OF THE ITEMS IN VARIOUS TESTS

Pass Percentage	Arith	RC(P)	RC(S)	W K	A W	S S	Spell
0 - 9	5	-	-	-	1	-	-
10 - 19	1	-	-	-	5	-	-
20 - 29	11	4	6	-	8	2	5
30 - 39	8	9	2	-	3	1	7
40 - 49	6	10	5	11	5	9	7
50 - 59	3	7	3	21	1	3	6
60 - 69	3	10	-	7	1	2	-
70 - 79	2	4	-	1	-	1	-
80 - 89	1	-	-	-	-	-	-
Median	34.2	48.5	39.5	53.8	27.0	46.2	40.2

The test in Word Knowledge turned out to be the easiest. The apparent higher pass percentages were also due to the format (two alternatives only) of the test. The last two tests, namely Sentence Structure and Spelling, were constructed by the State Centre itself, they were of moderate difficulty. Lower pass percentages in RC(S) and AW had been noticed in some other States as well. The two tests had a common type of item, namely, the missing word in a sentence to be selected out of a given four, the criteria for selection in the two tests were different. As these types of questions frequently occur in textbooks in exercises at the end of the lessons, it was not clear why children found this type of item difficult. It is likely that the alternatives provided required more careful selection than what the children were used to.

On the whole, considering that the children in Sikkim learnt through the medium of a language that was not their mother tongue, their achievement was not very poor. It was much poorer in arithmetic.

The median Index of Discrimination varied from a very low of 19.5⁷ for the test on Arithmetic to a high of 69.5 for RC(S).

The Groups in the Study

The Pupils

More than one thousand pupils of Class IV responded to the tests in Sikkim. Sixty per cent of these were from rural areas, and 41% were girls. Their average age was 12.2 years, the highest among all the States. The percentage of Scheduled Tribe children was less than 18%,

another 3% belonged to Scheduled Castes; the majority were classified under 'Others'.

On the education of the parents, Sikkim had a somewhat unusual picture: 73% of the fathers but only 38% mothers were reported to be illiterate. Another 19.5% fathers and 38% mothers had studied up to the primary level. There were no graduate fathers but 2.4% mothers had gone to college. Eighty-two per cent fathers were farmers, 6% had salaried jobs, unemployment or unskilled work was not reported by any. Two-thirds of these children came from large families having four or more children, only 7% had one or no sibling.

Ninety-seven per cent children spoke some language other than English, which was the medium of instruction at school. Only 9% children had attended some pre-school programme. Eighty-one per cent could attend school regularly; most of them also had some place at home where they could sit and study. Nearly half the children could get some help with their homework set by the school. Textbooks and other study material were available to approximately 90% of the children; only 1% said they had few textbooks or inadequate other study material. Twenty-five per cent children had to help their families for two or more hours every day.

A newspaper was received in a small 13% of the families, and magazines, etc., in 33%. Sixty-three per cent homes had no books and 70% children said they did not read anything other than their textbooks. Watching TV was the minimum in Sikkim, with 95% children saying they had no television sets at home.

Children from Sikkim seemed the most disadvantaged group in the country. Their medium of instruction was a language other than what they spoke at home, more fathers were illiterate, a large majority were farmers. Most homes did not have books or other reading material, nor did the children watch any television.

The Teacher

Eighty-one per cent of 137 teachers who provided information about themselves were teaching in rural schools, 39% were women. These teachers were young as a group, 76% of them being younger than 35 years in age; 64% had taught for 10 or a lesser number of years.

The number of graduates was the second lowest in the country. Non-matriculates were a high 37%, lower only to the comparable percentage in Meghalaya. With regard to professional training, 53% had received one year of education preparing teachers to teach primary classes, 8% had two years of similar education; 31% teachers marked the category 'any other' which included untrained teachers as well. The headmasters reported

⁷ The responses to the items on the test in arithmetic seemed very haphazard.

32.5% teachers in the schools to be untrained. In-service education had been available to more than 50% of the teachers.

Only a third of the teachers lived very close to their schools, 18% spent more than two hours every day to travel to and from their schools, the rest travelled for some reasonable time to reach their place of work.

The teachers, as in most other States, kept to known practices of teaching, with only 16% saying they tried some innovative practices, though the majority believed that a change in teaching methods would get students more interested in their studies as also improve their achievement. Twelve per cent teachers said they rarely used anything other than the textbooks. A similar percentage had never developed any teaching/learning material themselves. Only 38% teachers had developed some teaching aids.

Although 56% teachers evaluated their students every month, comprehensive use of the feedback available from the evaluation was made by only 17% of them; 42% used it only for promoting pupils from one class to the next.

More than half the teachers had their own copies of the textbooks; some had library copies but 18% borrowed them from the pupils, 15% had no access to a dictionary. None of the teachers in Sikkim said they checked homework regularly; they did it some times. Nearly 80% teachers said they helped weak students by paying special attention to them but 17% asked the parents to arrange private tuition.

On the average, more teachers in Sikkim were non-matriculants and untrained than in most other States in the country. They taught along the familiar lines without putting in any extra effort.

The Headmasters

Of the fifty-one headmasters, who responded to the questionnaire, 10% were untrained, 29% had a B.Ed. degree, and the rest had received one or two years of training meant for preparing primary school teachers. They were quite young as a group, with 31% being younger than 35 years of age; 10% had taught for less than 10 years but 45% had been in this position for less than five years.

The Schools

Eighty-four per cent of the schools were in rural areas, 94% were managed by the State government or local bodies; only 6% were private aided. Forty-seven per cent schools were primary only; 29% had Classes I to VIII,

and the rest 24% had Classes I to X or XII. Fifty-one per cent had even pre-primary classes. Twelve per cent schools were exclusively for girls and another 8% for boys only; the rest were co-educational. Although most teachers in Sikkim were young, only 18% schools had been opened in the last ten years.

Forty-one per cent schools had a separate room for the headmaster and 47% had a common room for the teachers. Except for 16% schools, all others had the facility of drinking-water, and two-thirds of the schools had separate urinals for girls.

Only 10% schools reported having Book Banks, the average number of books in the school library was 155. The percentage of schools that detained children who did not learn at the expected level even in Class I was the highest (86%) among all the States. Operation Blackboard had not touched 59% of the schools.⁸ Fifty-three per cent schools had a Parent Teacher Association and held one or more meetings in a year.

Most of the schools in Sikkim were managed by the government—State or local; the sample had more than 50 schools which had classes beyond the primary section. Schools detained non-achieving children right from Class I.

Achievements of Pupils

Data were available from 1,085 pupils who had studied up to Class IV in the formal school system. Their achievements are analysed in the following pages.

Table 18.4

ACHIEVEMENTS OF PUPILS

<i>Test</i>	<i>Arith</i> (40) ⁹	<i>RC(P)</i> (14)	<i>RC(S)</i> (16)	<i>W.K.</i> (40)	<i>A.W.</i> (24)	<i>S.S.</i> (18)	<i>Spell</i> (25)	<i>Total</i> (207)
Mean	14.7	22.1	6.2	21.7	7.1	8.4	9.9	90.4
SD	3.3	9.5	4.5	5.7	3.4	3.7	5.6	
Mean as Percentage	36.7	50.2	38.7	54.2	40.8	46.7	49.6	43.7
KR-20	30	91	88	72	69	74	85	
All India	41.2	15.4	43.1	49.5	41.7	57.8 ¹⁰	42.8 ¹⁰	45.2
Median as Percentage								

The maximum percentage achievement was noticed in tests of Word Knowledge, followed by Reading Comprehension (paragraph), indicating a fair grasp of the language on the part of the children. Relatively low percentages on Reading Comprehension (sentences) and Appropriate Word had been noticed in other States as well. The common format of the items in these two tests

⁸ More than 50% schools in the sample were middle or secondary schools.

⁹ The maximum possible score.

¹⁰ The content of these two tests was not common to all languages. Tripura is omitted from this calculation.

was expected to be familiar as similar exercises were often given at the end of the lessons in the textbooks.

Although the achievement on the test of arithmetic was not considered very low, the data available did not look reliable, both the standard deviation and the index of reliability were unusually small. The low Discrimination Indices also indicated haphazard marking of responses.

The States were requested to administer the test battery to a small sample of children who had studied up to Class V. The purpose was to study the improvement in achievement in one year.

Table 18.5

MEAN ACHIEVEMENTS OF PUPILS — CLASSES IV AND V

Class	Arith	RC(P)	RC(S)	W.K.	A.W.	S.S.	Spell	Total
IV (1085)	11.7	22.1	6.2	21.7	7.4	8.4	9.9	90.4
V ¹¹ (44)	12.9	19.8	6.8	21.9	6.4	8.5	7.8	84.1

The mean achievements of pupils of Class V were lower than those in Class IV in 4 out of 7 tests. The differences in favour in the rest of the three tests were smaller, adding to a difference of 6.3 scores against the higher grade. Even on the two tests wherein the tasks were taught more specifically in school, namely, arithmetic and spelling, the children of Class V had lower means. At best one could accept a hypothesis of no difference between these two class groups.

The State educational authority could not think of possible reasons for this situation.

The achievements of pupils from the capital city of Gangtok and the rest of the State have been compared in Table 18.6.

Table 18.6

ACHIEVEMENT OF PUPILS — REGION-WISE

Region	Arith	RC(P)	RC(S)	W.K.	A.W.	S.S.	Spell	Total
Gangtok Mean	14.2	24.3	6.3	22.0	8.2	8.7	10.3	94.0
(184) SD	2.8	10.0	4.9	5.8	3.9	4.3	5.9	
Rest of Mean	14.8	21.7	6.2	21.6	7.3	8.4	9.9	89.9
the State SD	3.4	9.4	4.5	5.7	3.3	3.6	5.5	
(901)								

The children in the capital achieved higher than those in the rest of the State but the difference was not very high. In several States, the children of the higher socio-economic strata concentrated in the capital city tend to prefer English-medium private schools. Although

the 'private school' attraction was not totally ruled out, the medium of instruction being English in the State, some of the group were likely to have remained in the public-financed schools from which most of the data were collected. The maximum difference was noticed on Reading Comprehension (paragraphs), that, with small gains in other tests with the exception of the test in arithmetic,¹² added to a gain of 4 points in the total.

The achievements of children in two tests, namely, Arithmetic and Reading Comprehension (paragraphs), were also studied objective-wise, and in the case of Arithmetic, topic-wise also.

Table 18.7

ACHIEVEMENT IN ARITHMETIC — OBJECTIVE-WISE

Objective	Mean	SD	Mean as Percentage
Knowledge (19) ¹³	8.4	2.6	44.2
Understanding (12)	3.9	1.4	32.5
Application (9)	2.4	1.8	26.7
Total (40)	14.7	3.3	36.7

The mean achievement on the three objectives was in the expected direction, the young children were still learning to apply their knowledge.

Table 18.8

ACHIEVEMENT IN ARITHMETIC — TOPIC-WISE

Topic	Mean	SD	Mean as Percentage
Time (3)	1.1	1.0	36.7
Factors and Multiples (7)	2.3	1.4	32.8
Fundamental Operations (12)	3.4	1.6	28.3
Weights and Measures (3)	9	8	30.0
Fractions (5)	1.5	9	30.0
Decimals (7)	3.6	1.3	51.4
Unitary Method plus	1.9	7	63.3
Others (3)			
Total (40)	14.7	3.3	36.7

Unitary Method was found to be easy in nearly all States. It was felt that the questions included in the test were very similar to the ones found in the textbooks, with the additional advantage of small numbers used in this test. The next highest percentage score on Decimals could be due to 'recency' but a very low mean percentage of 28.3 on 12 items classified as 'Fundamental Operations' was very disappointing. Several of these items tapped understanding or were written somewhat differently than presented in the most textbooks.

¹¹ The State Coordinator said they returned data for a larger number of pupils of Class V, correspondingly, the number for Class IV was smaller. It is possible that some pupils ticked their class incorrectly. As the basic number of Class IV pupils was much higher, the trend, if not the absolute values, could be viewed seriously.

¹² The data on this test did not look very reliable.

¹³ The maximum possible score.

Table 18.9ACHIEVEMENT IN READING COMPREHENSION (PARA)
OBJECTIVE-WISE

Objective	Mean	SD	Mean as Percentage
Noting Detail (17)	9.0	4.0	52.9
Simple Comprehension ¹⁴ (13)	7.5	3.2	57.7
Inference ¹⁵ (14)	5.6	3.2	40.0
Total (44)	22.1	9.5	50.2

The satisfactory overall mean on this test had been commented upon earlier, however, a higher percentage on the second objective, namely, Simple Comprehension, than the one for Noting Details was hard to explain. The percentage mean score on Inference was in the expected direction.

The differences in the achievements of pupils when divided over location, gender and caste were also studied. The relevant details are presented in the following tables.

Table 18.10

DIFFERENCES IN ACHIEVEMENT — LOCATION WISE

Test	Location	Mean	SD	t
Arith.	U	14.7	3.0	2.2
	R	14.7	3.5	
RC(P)	U	23.6	8.5	4.16
	R	21.2	10.1	
RC(S)	U	5.8	4.2	2.05
	R	6.4	4.7	
W.K.	U	21.3	4.7	1.78
	R	21.9	6.3	
A.W.	U	7.7	3.5	1.90
	R	7.3	3.4	
S.S.	U	8.2	3.8	1.95
	R	8.6	3.7	
Spelling	U	9.6	5.6	1.42
	R	10.1	5.6	
RC (total)	U	29.4	11.5	2.40
	R	27.6	13.2	
T (5 + 6 + 7)	U	25.5	10.5	82
	R	26.0	10.6	

Urban - 429 Rural - 656

* $p < .05$, * $p < .01$

The differences among urban and rural children were found to be statistically significant only in two of the seven tests — both for testing reading comprehension — but the same were in the opposite direction. If the smaller difference of .6 (though statistically significant at .05 level of significance) is ignored, the urban group achieved higher in Reading Comprehension. The rural group

achieved somewhat higher in four out of seven tests, bringing up its aggregate to 90.2 in comparison to 90.7 of the urban children. The two were nearly equal.

Table 18.11

DIFFERENCES IN ACHIEVEMENT — GENDER WISE

Test	Gender	Mean	SD	t
Arith.	B	11.8	3.5	1.17
	G	11.5	3.0	
RC(P)	B	20.5	9.8	6.65
	G	21.1	8.6	
RC(S)	B	6.2	1.1	20
	G	6.2	4.1	
W.K.	B	22.3	5.1	4.25
	G	20.8	6.0	
A.W.	B	7.3	3.6	2.15
	G	7.7	3.2	
S.S.	B	8.3	3.5	1.71
	G	8.7	1.0	
Spelling	B	9.8	5.3	1.11
	G	10.2	6.0	
RC (total)	B	26.8	12.0	4.94
	G	30.6	11.7	
T (5+6+7)	B	25.3	10.1	1.89
	G	26.6	11.2	

Boys - 643 Girls - 442

* $p < .05$; * $p < .01$

The girls had a higher aggregate score of 92.5 as compared to the 89.2 of the boys. The former had a significantly higher mean on Reading Comprehension (para) but lost out to the boys on Word Knowledge. Most other differences were insignificant — statistically and otherwise. The achievements of girls became higher mainly because of the test in Reading Comprehension.

Caste-wise, the data were available actually for three groups only. Two pupils were listed as belonging to Backward Classes but persistent zero standard deviation on all the tests suggested that there was only one pupil, repeated by mistake in recording. The number of SC pupils was also very small, less than 3% of the sample, their mean achievement was not only the highest but quite a bit higher than that of 'Others'. The bulk of the population (79%) categorised under 'Others' consisted mainly of Christians, Scheduled Tribes were another 18%. The former got a big advantage on the test in Reading Comprehension (para) which left it with a somewhat higher aggregate. Otherwise, the direction of the differences kept changing in most of the tests in favour of one or the other group. It was different even for the two tests for Reading Comprehension.

¹⁴ This includes,

(a) deriving the meaning of difficult words from the context, and

(b) relating things at a simple level.

¹⁵ This includes identifying the message or the central idea and the title of the write-up.

Table 18.12

DIFFERENCES IN ACHIEVEMENT — CASTE-WISE

Test	Group	Mean	SD	<i>t</i>
Arith	SC	19.6	1.1	28.27*
	ST	15.4	3.7	
	BC	14.0	0.0	
	Others	11.4	3.1	
RC(P)	SC	22.6	3.5	14.22*
	ST	18.3	8.9	
	BC	9.0	0.0	
	Others	23.0	9.6	
RC(S)	SC	4.7	3.2	8.81
	ST	7.6	4.3	
	BC	5.0	0.0	
	Others	5.9	4.6	
W.K.	SC	23.1	2.3	0.89
	ST	21.3	5.8	
	BC	20.0	0.0	
	Others	21.7	5.8	
A.W.	SC	11.1	2.5	14.26
	ST	6.7	2.8	
	BC	6.0	0.0	
	Others	7.5	3.9	
S.S.	SC	7.1	0.8	1.32
	ST	8.5	3.2	
	BC	10.0	0.0	
	Others	8.5	3.9	
Spelling	SC	9.5	1.8	0.36
	ST	10.3	5.2	
	BC	9.0	0.0	
	Others	9.9	5.8	
RC (total)	SC	27.3	3.5	3.84*
	ST	26.0	10.9	
	BC	14.0	0.0	
	Others	28.9	13.0	
I (5+6+7)	SC	27.8	3.4	0.37
	ST	25.5	8.9	
	BC	25.0	0.0	
	Others	25.8	11.1	

SC - 29 ST - 193 BC - 2 Others - 861

* $p < .05$ $p < .01$

The picture of differences over caste groups was not very clear.

Factors Related to Pupils' Achievement

Data regarding some personal variable and home background of the pupils was collected through a questionnaire. Regression analysis was carried out against two criteria, namely achievement in arithmetic and reading comprehension, separately. But before this step, data on several variables were combined to obtain composite

scores on 'Home Background', 'Facilities for Learning' and 'Educational Environment at Home'.

The regression coefficients for the variables entered in the three composite variables are given below.

Home Background

	RC	Arith
Location	-1.69	11
Father's Occupation	-1.50	.44
Caste	2.70	-75*
Father's Education	.80	11
Mother's Education	1.19	68
Number of Siblings	-5.98*	99*
R	.39	.37

$p < .05$, * $p < .01$

The variables that contributed significantly in maximising R with both the criteria were 'Father's Occupation', 'Caste', 'Father's Education' and 'Number of Siblings'. With the exception of the educational status of the parents, the signs of regression coefficients of all other variables were in opposite direction for the criterion variables. It was observed earlier that the scores on Arithmetic did not appear to be very reliable.

More variables contributed to differences in achievement in Reading Comprehension than in Arithmetic although the percentage of related variance was not very different, being 15% and 13.7% respectively.

Facilities for Learning

	RC	Arith
Attended Pre-school	-8.53*	1.09
Place for Study	3.31*	-21
Help in Homework	1.59*	10
Availability of Textbooks	-2.51	-2.89*
Availability of Study Material	-2.30*	13
Helping Household	3.91*	-19
Regularity in Attendance	-8.19*	1.31*
R	.34	.37

$p < .05$, * $p < .01$

Only two variables, 'Availability of Textbooks' and 'Attending School Regularly', contributed consistently towards differences in achievement in both the school subjects. Though the regression coefficients of 'Attended Pre-school' were significant in both the equations, their directions were different. Of the rest, all the variables added something towards achievement in Reading Comprehension. As in the case of the previous composite variable both R^2 are substantial, being 2 and 14% respectively. Although fewer variables seemed to be related to achievement in Arithmetic, the percentage of variance as could be explained by this composite variable was higher by 2%.

Educational Environment at Home

	<i>RC</i>	<i>Arith</i>
Get Newspaper	-3.48'	-1.18'
Get Magazines	-4.94'	.76
Books at Home	4.73"	-.22
Read Books	-1.14	-1.53
<i>R</i>	.31	.29

' $p < .01$

Two variables having a consistently important regression coefficient in their direction and statistical significance were 'Get Newspapers' (at home) and (the pupil) 'Read Books'. 'Get Magazine' had significant regression coefficients but with opposite signs--this was difficult to understand.

In spite of the somewhat confused picture, all the three composite variables had high *R*'s as compared to the other States.

The three composite variables, along with five others, were regressed with the two criterion variables with the purpose of studying their contribution to differences in pupil achievement. The contributions to R^2 are summarised in Table 18.13.

Table 18.13(a)

CONTRIBUTION OF PUPIL-RELATED VARIABLES
TO ACHIEVEMENT IN READING COMPREHENSION

<i>Variable</i>	<i>R</i>	<i>R</i> ²	<i>Increment in R</i> ²	<i>t</i>	<i>r</i>
Word Knowledge	.5522	.3049	.3049	4.75 02'	.55
Home Background	.6117	.3741	.0693	1.19 73	.38
Gender	.6425	.4128	.0387	.71 16'	.15
Educational Environment	.6638	.4406	.0278	.53 75'	.29
Similar Language	.6685	.4469	.0062	.12 12	-.14
Facilities for Learning	.6724	.4521	.0053	.10 39	.31
Time Watch TV	.6727	.4526	.0004	.088	.00
Age	.6727	.4526	.0000	-	-.20

" $p < .01$

The thing most noticeable about the two parts, (a) and (b), of Table 13 was the dissimilarity of various values. A small difference here and there had been observed in other States as well but in Sikkim the two were totally different. The variables changed their positions in selection from top to bottom against the two criteria, e.g., 'Word Knowledge' and 'Time Watching TV'. Values of '*r*' were dramatically different. 'Word Knowledge' had an '*r*' of .55 with RC and .04 with Arithmetic.

A comment on achievement in Arithmetic would be

in place here. The test proved difficult, so it did in some other States, such as Karnataka, Tripura and Madhya Pradesh, but the pattern of responses of the pupils was somewhat erratic in Sikkim. This was reflected in the indices of discrimination for the items. Only in Sikkim, 18% of the items had negative indices, half of all items had discrimination indices lower than 19.5. Low or negative '*t*'s were related to inconsistency in performance on various items with other variables. One possibility was very poor knowledge of arithmetic on the part of the children in the State. In the selection tests conducted by Navodaya Vidyalaya Samiti in 1988-89 among the 20 States common to this project and NVS, the mean score of Sikkim was higher only to that of Jammu.

Table 18.13 (b)

CONTRIBUTION OF PUPIL-RELATED VARIABLES
TO ACHIEVEMENT IN ARITHMETIC

<i>Variable</i>	<i>R</i>	<i>R</i> ²	<i>Increment in R</i> ²	<i>t</i>	<i>r</i>
Time watch TV	.1913	.0366	.0366	4.1 14	.19
Age	.2066	.0427	.0061	.6 87'	.06
Home Background	.2328	.0542	.0115	.13 15'	-.10
Facilities for Learning	.2553	.0652	.0110	.12 72	.07
Similar Language	.2648	.0701	.0049	.5 68	.12
Educational Environment	.2717	.0738	.0037	.4 35'	-.01
Word Knowledge	.2718	.0739	.0000	-	.04
Gender	.2718	.0739	.0000	-	-.04

' $p < .05$, " $p < .01$

Concentrating on the data presented in Table 18.13 (a), it could be seen that except for age and time spent on watching TV, all other variables contributed a statistically significant increment to R^2 the most important being 'Word Knowledge' which was chosen as a surrogate for pupil ability. 'Home Background' also made a substantial contribution to R^2 . Although, apparently, the girls achieved better than the boys by a small margin, the variable made a significant contribution to R^2 . Forty-five per cent of the total variance related to differences in achievement in language could be explained by differences in the pupil-related variables. The corresponding percentage for arithmetic was only 7.4%.

Due to some errors in punching the school codes, matching the school means with data pertaining to the institution made available by the headmasters became difficult. Regression analyses explaining between-school differences was not carried out for Sikkim.

INTER CORRELATIONS OF PUPIL-RELATED VARIABLES AND ACHIEVEMENT

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
1	100	14	-13	00	08	04	-24	15	-06	08	-02	-04	-11	-01	-10	-00	02	-06	-12	-17	-03	-01	-13	06	05	-06	06	04	-07	-19	.10	-0
2	100	-01	24	06	-07	-09	19	-23	31	-06	03	12	11	-09	04	.16	-12	-21	03	-11	-06	-19	-13	-20	-03	-15	-13	-20	-38	-08	-09	
3	100	-16	10	06	07	03	10	09	12	12	09	05	04	02	02	-08	10	08	07	-04	-20	00	-13	07	05	03	15	07	-01	11		
4	100	-04	02	08	-26	-53	06	-36	.00	-09	15	-02	15	-12	-15	-43	-14	-24	03	-17	-13	-05	19	-19	-10	-18	-43	-29	-25			
5	100	-06	-47	-22	-19	22	07	-04	11	18	09	24	-09	-14	10	12	-07	-22	16	-10	00	-01	02	-02	09	-22	03	19				
6	100	05	06	-00	01	20	-05	-02	-08	-20	.09	40	04	03	40	30	12	-14	-07	-07	-04	-03	03	-14	-03	-10	-16					
7	100	-03	.15	34	04	17	01	-17	-07	-40	04	16	-05	-07	04	20	04	-13	-10	01	-09	-07	-07	09	-20	-15						
8	100	34	-20	18	-03	-32	-41	-03	-09	.21	15	13	01	05	.10	-01	40	14	06	18	12	14	34	24	-04							
9	100	-13	12	-01	-33	01	-06	-08	13	18	23	-0	14	25	14	21	-03	-04	13	03	18	44	05	08								
10	100	-11	-01	-02	15	-14	23	-27	-15	-05	00	08	11	-24	-30	-28	-28	-27	-30	-29	-72	-10	13									
11	100	04	04	-23	-07	-10	27	13	31	17	16	-02	11	19	05	11	23	06	15	18	39	10										
12	100	08	-08	04	-14	05	22	25	04	12	03	16	-11	07	-04	-01	-01	08	-01	22	09											
13	100	15	19	-03	29	10	30	08	02	-30	10	-30	-11	16	-07	-06	-03	-06	-12	-10												
14	100	.04	19	-09	-03	-16	02	02	-07	-06	-19	-12	-10	-13	-10	-12	-12	-31	-10													
15	100	15	-09	.08	-04	04	04	-12	15	-03	05	14	04	01	11	15	29	-05														
16	100	13	06	-02	23	05	-20	-19	-16	-14	-11	-15	-19	-20	-13	-54	-12															
17	100	25	09	29	33	-17	-19	06	-05	-05	-02	-04	-13	25	-04	-39																
18	100	34	27	19	-00	-10	-13	-10	10	-02	-12	-12	16	-05	-38																	
19	100	32	12	-10	23	08	06	11	28	15	21	30	20	65																		
20	100	-16	-26	00	-08	-08	13	09	04	-03	11	-05	-09																			
21	100	-19	03	07	03	04	11	.06	00	14	02	-10																				
22	100	18	16	04	-11	06	10	20	-10	07	-01																					
23	100	57	46	51	66	56	95	35	27	32																						
24	100	57	40	66	56	.76	31	29	14																							
25	100	42	57	44	55	22	25	14																								
26	100	52	37	53	24	13	02																									
27	100	64	73	.31	28	28																										
28	100	63	25	22	16																											
29	100	.38	31	29																												
30	100	28	15																													
31	100	32																														
32	100																															

Table 18-B

INTER CORRELATIONS OF SCHOOL-RELATED VARIABLES AND ACHIEVEMENT

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
100	26	50	10	-02	07	-52	-05	.14	-06	-33	04	-15	-18	-41	02	10	-15	18	10	.08	18	-18	15	19	21	-13	07	21	-27	-37	-05	-41	-13	-25	-41	-31	-07	-36
100	50	.37	-27	17	-29	-40	-20	34	-08	-08	19	-04	-44	.15	-10	07	06	-05	17	-08	-24	-12	.17	35	-08	-24	-27	-35	09	-34	-18	08	-33	-34	-27	09	-11	1
100	29	-28	28	-18	-08	-11	-47	-43	23	.16	-06	-67	-11	-40	23	01	-08	10	30	-11	-01	16	16	-00	12	-06	-12	-18	00	02	42	27	01	19	45	17	2	
100	-27	-16	-05	-26	16	34	04	-21	25	-02	-36	24	02	-08	-20	-24	08	-34	-07	34	-05	16	06	-10	-01	-21	01	24	.12	39	23	-02	24	36	.23	3		
100	-14	35	-03	58	-35	50	-41	-39	15	45	-49	-16	-32	-06	-09	-61	12	-16	04	-14	-01	-26	-27	31	21	14	-17	-09	05	-02	-09	-01	-00	-06	4	4		
100	12	30	-23	33	-30	26	-10	-23	-14	03	03	-03	36	-05	11	60	10	-08	33	14	-16	-14	32	-09	-13	10	11	03	10	14	04	11	10	5	5			
100	-10	35	06	41	-11	13	.23	.44	-36	-34	23	-32	-22	-43	12	07	01	-14	-16	-04	-15	.21	.07	14	19	.21	16	22	17	16	03	.22	6	6				
100	-27	-09	-22	26	-18	12	17	-07	03	-10	19	09	-08	02	35	.07	21	-26	-32	-18	35	15	-26	-40	-10	-02	18	25	11	02	-09	7	7					
100	01	39	-35	-36	-07	21	-37	-10	-11	-13	12	-23	07	-28	18	-19	12	-28	-08	42	10	16	.13	06	11	10	-06	10	12	08	8	8						
100	-08	01	.25	-19	-63	-01	-11	33	28	.35	25	12	14	-13	18	01	00	03	-09	00	38	.00	.14	29	31	11	23	40	21	9	9							
100	-79	20	00	37	-16	.04	09	09	07	-22	-05	17	.32	20	-04	-06	-01	-07	22	23	38	-19	45	-03	07	28	26	20	14	01	10	10						
100	-15	24	-21	-17	-10	07	-22	-05	17	.32	20	-04	-06	-01	-07	22	23	38	-19	45	-03	07	28	26	20	14	01	10	10	10	10	10	10	10	10	10		
100	22	-28	27	-02	10	-02	-08	-06	-10	11	18	02	-15	57	31	-18	-25	-08	19	-08	-16	-16	-16	-16	-16	-16	-16	-16	-16	-16	-16	-16	-16	-16	-16	-16	-16	
100	15	-22	-13	02	-61	-32	-15	21	.17	-11	.32	-15	21	17	-11	.32	-15	21	17	-11	.32	-15	21	17	-11	.32	-15	21	17	-11	.32	-15	21	17	-11	.32	-15	21
100	-04	-06	-11	-10	-06	-34	-21	-07	-22	-04	01	-13	-26	30	25	04	-21	09	24	-25	-06	-17	-38	-02	17	-36	03	-06	-15	-15	-	-	-	-	-	-	-	
100	44	-14	14	-04	.34	-18	03	-24	32	19	19	-01	.07	-22	16	03	-03	-43	-42	-36	-36	-41	-17	17	-36	03	-06	-15	-12	11	00	10	10	10	10	10	10	10
100	-04	19	24	04	-21	-24	.25	-01	.29	11	08	21	-06	-01	-16	-10	-35	-20	-22	-22	-22	-22	-22	-22	-22	-22	-22	-22	-22	-22	-22	-22	-22	-22	-22	-22	-22	-22
100	09	30	14	-23	-19	-23	-09	09	23	.14	-05	00	11	13	.14	26	30	15	19	18	20	18	20	18	20	18	20	18	20	18	20	18	20	18	20	18	20	
100	66	22	09	-01	-19	51	12	06	-02	26	-03	-07	-07	09	-11	-09	-01	-08	-04	04	04	04	04	04	04	04	04	04	04	04	04	04	04	04	04	04	04	04
100	04	-20	-08	-31	24	15	-07	00	14	31	28	-14	03	-20	-12	-11	-11	-10	-05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	
100	.19	12	-00	09	-01	12	24	-17	-24	-06	23	03	.01	07	21	10	09	02	02	02	02	02	02	02	02	02	02	02	02	02	02	02	02	02	02	02	02	02
100	11	01	20	-04	.02	33	.20	00	-14	20	.09	07	19	29	12	14	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
100	-06	10	-87	-02	-03	-26	-19	01	-23	-08	-27	00	01	-13	-25	-15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
100	-28	-12	-03	07	10	-29	-63	-03	-13	17	24	14	17	20	-04	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05
100	01	-02	06	13	-24	-16	14	-13	-12	-19	-10	-23	-17	-14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
100	-06	-10	34	33	16	17	.08	21	-04	-07	10	22	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
100	80	-18	-01	-07	15	10	-03	10	03	00	-07	07	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
100	-17	.08	-20	30	11	07	27	18	14	09	11	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
100	15	-08	-17	-04	-03	04	-06	-01	01	-04	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05
100	39	-34	19	21	34	22	36	28	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
100	07	10	-07	-08	-13	-01	-04	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05
100	05	03	-44	-40	-32	-10	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05	05
100	52	51	58	67	50	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95
100	83	66	86	95	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76	76
100	80	93	82	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69
100	88	64	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68
100	86	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83
100	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72
100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Tamil Nadu

The State of Tamil Nadu, along with Maharashtra, had the second largest population of primary school children, next only to Uttar Pradesh. The State was requested to administer the tests to approximately 7500 children which were to be selected from 305 schools. Data were returned for approximately 70% of the pupil sample from 294 (96%) schools. Data from six schools was dropped for one reason or the other. The following table gives the details of samples of the schools and the pupils in different regions.

Table 19.1

SAMPLES PLANNED AND ENTERED IN ANALYSES¹

<i>Regions</i>	<i>No. of Schools</i>	<i>No. of Pupils</i>
Capital City	36 ²	900 ²
	31 ³	707 ³
Coastal	24	600
	24	590
Southern	47	1175
	44	818
Inland	68	1600
	62	989
Coastal Northern	130	3250
	127	2173
Total	305	7525
	288	5277

In Tamil Nadu most of the schools were approached; the shortfall in the number of pupils was due to the difference between the reported enrolment, which was used for deciding the number of schools, and the actual number of children who attended school on a particular day. The average attendance in Tamil Nadu was reported to be 86%.

How representative was this sample of the total population of primary schools and children? Some of the statistics of the obtained sample were compared with those available from the Fifth All India Educational Survey of 1986.

Table 19.2

SAMPLE AS COMPARED TO THE POPULATION

<i>Variable</i>	<i>Percentage</i>	
	1986 Survey	Sample in the Study
Primary (only) Schools	83.1	83.0 ¹
Girl Students	46.0	47.5 ⁵
Scheduled Caste Students	20.2	23.4 ⁵
Scheduled Tribe Students	1.0	1.9 ⁴
Women Teachers	39.3	44.3 ⁶
Trained Teachers	100.0	99.4 ¹

The slight increase in percentage of enrolment of girls and of children belonging to Scheduled Castes and Scheduled Tribes was in the expected direction and not considered indicative of a difference between the sample and the population. Similarly, an increase of 5% for women teachers was considered to be a likely change over the five years. The minor discrepancy of percentage of untrained teachers (-6%) against a nil entry in the survey could be attributed to punching errors only. The State Coordinator reiterated the absence of untrained teachers. It may be mentioned that the percentage of untrained teachers as reported by the headmasters was nil.

On the whole, the samples could be considered representative of the populations of schools and pupils.

The Tests in the State

The tests developed in Hindi were translated into Tamil, Tamil being one of the few Indian languages which is

1 The numbers entered are smaller than the number of pupils and schools reached as some data were dropped from the analyses for various reasons.

2 The numbers planned.

3 The numbers returned.

Source

4 The School Questionnaire.

5 The Pupil Questionnaire.

6 The Teacher Questionnaire.

basically different from Hindi, the translations could change the difficulty levels of the test

Table 19.3

DIFFICULTY VALUES OF ITEMS

Pass Percentage/Anth	RC(P)	RC(S)	W K	A W	S S	Spell	
10 - 19	-	2	1	-	2	-	1
20 - 29	7	9	3	-	7	-	1
30 - 39	18	11	4	6	9	-	3
40 - 49	8	12	7	17	3	3	7
50 - 59	2	8	-	15	2	8	1
60 - 69	2	2	1	2	1	5	7
70 - 79	2	-	-	-	-	2	2
80 - 89	1	-	-	-	-	-	-
Median	36.7	39.5	39.5	44.0	32.8	57.0	50.7

The last two tests, namely the one on Sentence Structure and the one on Spelling, were constructed by the non-Hindi speaking States themselves. These were not translated. The higher median values on these suggest better suitability of the tests for the pupils in the State; the other tests proved somewhat difficult. Only thirty-two per cent of the total number of items had a pass percentage of 49.5 and above. The test in arithmetic, considered least susceptible to changes in translation, proved quite difficult. The median pass percentage for the items was 36.7%.

The Discrimination Indices were, however, satisfactory, the median values for the seven tests being 52.5, 52.5, 57.8, 50.2, 43.0, 68.1 and 64.5, respectively.

The Groups in the Study

The Pupils

The data available from 70% of the sample planned were entered in analyses. Of these 73% came from rural areas, 47% of them were girls. The percentages for SC, ST, BC and 'Others' were 23%, 2%, 71%, and 3.5%, respectively. These figures were different from other States in that there was a very large percentage for Backward Classes and (consequently) a very small percentage for 'Others'. The low percentage for ST could be easily attributed to the small population of this group in the State.

A high 13% reported their fathers being professionals or having high-salaried jobs. The percentage was higher than in several other States. Sixty-five per cent of the fathers had either studied only up to Class V or were illiterate, the comparable statistics for the mothers was 81%, comprising 48% illiterates. Twenty-eight per cent children were from large families of more than four children.

Only a small percentage of 6.3 reported that the language they spoke at home was different from their

medium of instruction at school. A pre-school programme had been attended by 17%. A large percentage of (84%) children reported having textbooks but the percentage reporting availability of other material such as notebooks, etc., was only 61%. Approximately 12% of the families received newspapers or magazines, 86% had no books other than textbooks at home.

Eighty per cent of the children said they did not read anything other than their textbooks, 32% watched television programmes varying from 1/2 hour to 2 hours every day.

A small 8% of the children reported availability of some place to study at home; 40% said they received help in doing their homework. Only 18% had to help their parents for two or more hours every day.

The things most noticeable about the sample of pupils from Tamil Nadu were the large percentage from BC and the education of parents, particularly mothers. The environment at home was not the most encouraging for learning.

The Teachers

Five hundred and thirty teachers responded to the questionnaire designed to elicit information related to teachers. Forty-four per cent were women, 76% were teaching in the rural areas. In general, the teachers in Tamil Nadu were older, 23% of them being more than 50 years of age. Going with age, their teaching experience was also more, on the average, than in other States.

Ten per cent of these teachers had not studied up to Class X, 15% were graduates. A majority -- 84% -- had received professional education for two years meant for preparing teachers for primary schools, 10% had a B Ed degree, i.e., professional education for preparing teachers for secondary schools. Eighty-one per cent of the teachers had received some in-service education.

Fifteen per cent of the teachers spent two or more hours travelling to and from work; of these 9% reported spending more than three hours; only 32% seemed to reside near their place of work.

Thirty-two per cent teachers said they did not have copies of textbooks, either their own or from the library, but borrowed them (probably on the spot) from the pupils, 41% did not have access to the language dictionary.

Nearly 80% teachers had not adopted any new techniques in teaching. Use of material other than books was reported by 44%. Seventy per cent had developed some material themselves, 67% had involved even pupils in this exercise. Most teachers (61%) carried out monthly evaluations, but the results were used by the majority (54%) for the purpose of promotion only. Eighty-one per

cent teachers said they helped weak students by paying special attention to them in the class itself but 19% asked parents to arrange tuition. A large majority, (93%) reported checking homework regularly. They found students responsive in the class, 82% reported that the students asked questions in their classes.

In brief, the majority of the teachers in primary schools in Tamil Nadu had received general and professional education at the expected level, they were also an experienced lot. But a fairly large number did not have copies of textbooks or access to a dictionary in Tamil. More of them lived at some distance from their schools. They stuck to the traditional ways of teaching and traditional use of evaluation.

The Headmasters

There were no headmasters in schools in Tamil Nadu who had not received professional education but a small 4% had only one year of training meant for preparing teachers for primary schools. Nineteen per cent reported having a B.Ed. degree. As in the case of teachers, many of the headmasters were older, 47% being of more than 50 years of age, 68% had been headmasters for more than 10 years. Quite a few had been in this position for more than 15 years by this time.

Tamil Nadu had older and more experienced headmasters.

The Schools

The responses of 289 schools were summarized, 78% of these were located in rural areas. Seventy-four per cent schools were managed by the State government and another 4% by local bodies, 22% were private aided. Eighty-three per cent of the schools in the sample had only primary classes, 15% had primary plus middle grades, only 2% of the sample came from secondary schools which had primary sections. A large proportion, (87%) had been there for more than 20 years, only 3% schools were relatively new having been in existence for less than six years. Ninety-eight per cent of the schools admitted both boys and girls.

In Tamil Nadu, 22% of the schools had a separate room for the headmaster. This, of course, has to be seen along with the statistic of 17% having middle and secondary classes. The latter usually have a separate room for the headmaster. But the staff room for the teachers was available only in 7% of the schools. Drinking-water

was provided in 72% of the schools but only 25% of these had urinals for girls. On the average, one room was available per class section.

Eight per cent of the schools in this sample had pre-primary classes, 41.5% had Book Banks. The average number of books reported in the library was only 114. Eighty-one per cent of the schools followed the 'No-Detention' policy up to Class III, 3.5% reported that pupils could be failed from Class I itself. Another 9% omitted to respond to this question.⁷ Only 16% schools reported non-implementation (as yet) of Operation Blackboard. Again, this has to be seen in the light of a fairly large percentage of private aided schools. In 63% of the schools, it had been implemented more than a year ago. A Parent Teacher Association existed in 89% of the schools, with 72% reporting more than one meeting during the year, indicating an active PTA.

Achievements of Pupils

Five thousand two hundred and seventy-seven children of Class IV responded to the tests. The average scores on the seven tests are reported below.

Table 19.4

ACHIEVEMENTS OF PUPILS

<i>Test</i>	<i>Arith.</i> (40) ⁸	<i>RC(P)</i> (44)	<i>RC(S)</i> (16)	<i>W.K.</i> (10)	<i>A.W.</i> (21)	<i>S.S.</i> (18)	<i>Spell.</i> (25)	<i>Total</i> (207)
Mean	16.5	17.5	6.1	19.5	8.1	10.1	12.8	91.2
SD	8.1	8.6	3.6	8.1	4.2	4.7	6.0	
Mean as Percentage	41.2	39.8	38.1	48.7	35.0	57.8	51.2	141.0
All India Median as Percentage	41.2	45.4	43.1	49.5	41.7	57.8 ⁹	42.8 ⁹	15.2
KR-20	.89	.89	.78	.87	.75	.85	.88	

The percentage means in the five common tests were all below 50%, three of these being less than 40%. The two tests prepared by the SCERT had a mean achievement of more than 50%.

The test battery was administered to a small sample of 132 children studying in Class V. The sample was drawn from some of the schools from where the children of Class IV were selected. The purpose was to study the learning in one academic year.

7 The State Coordinator reported: "Usually all children are promoted up to the Class III standard without any detention. But if the pupils go for long leave (during) the term days of the schools, such pupils will be detained."

8 The maximum possible score.

9 Tripura is omitted. The context of these two tests was not common for all the States.

Table 19.5

MEAN ACHIEVEMENT OF CHILDREN — CLASSES IV AND V

Class	Arith	RC(P)	RC(S)	WK	A.W	SS	Spell	Total
IV (5277)	16.5	17.5	6.1	19.5	8.4	10.4	12.8	91.2
V (132)	17.3	17.9	5.9	19.7	10.0	10.8	13.7	95.2

With the exception of the test in Reading Comprehension (sentences) there was a small increment in the average score on each test adding up to a difference of 2% gain for the maximum possible score of 207— not a very heartening picture.

The achievements of pupils were also seen with a view to study the differences, if any, over regions, location, gender and caste. The relevant data are presented below.

Table 19.6

ACHIEVEMENT OF PUPILS — REGION-WISE

Region	Arith	RC(P)	RC(S)	WK	A.W	SS	Spell	Total	
Capital	Mean	14.3	17.2	5.8	19.1	8.6	10.9	13.4	89.3
City(707)	SD	7.4	8.8	3.5	8.4	4.2	5.0	5.9	
Coastal	Mean	17.1	16.9	5.7	21.1	9.2	11.9	15.6	97.5
(590)	SD	7.4	7.5	2.7	6.9	3.9	4.3	5.6	
Southern	Mean	19.3	19.1	6.3	19.9	9.0	11.3	13.8	98.7
(818)	SD	8.3	8.4	3.6	8.0	4.1	4.4	6.2	
Inland	Mean	17.4	18.5	6.9	20.9	9.2	10.8	13.5	97.2
(989)	SD	8.4	8.8	4.0	8.2	4.2	4.7	5.9	
Coastal	Mean	15.6	16.7	5.9	18.5	7.6	9.3	11.2	84.8
Northern	SD	8.0	8.6	3.7	8.1	4.3	4.5	6.0	
(2173)									

The differences between regions were not very large as in case of some other States; the total scores varied between 85 to 99 only. If regions were ranked on the basis of total scores, the Southern region was on top with a score of 98.7, followed by Coastal (97.5) and Inland (97.2); these three had nearly the same average out of the total score. The lowest achievement was from Coastal Northern with an average of 84.8 scores only. The capital city of Madras had 88.3 as the mean. The capital cities in several States had a lower average, the probable reasons are discussed in the section on differences between States.

10 This includes,

- (a) deriving the meaning of difficult words from the context, and
- (b) relating things at a simple level.

11 This includes identifying the message or the central idea and the title of the passage.

The achievement of children on two tests, namely, Arithmetic and Reading Comprehension (para), was also studied objective-wise, and in the case of Arithmetic, topic-wise too.

Table 19.7

ACHIEVEMENT IN ARITHMETIC — OBJECTIVE-WISE

Objective	Mean	SD	Mean as Percentage
Knowledge (19)	8.4	3.9	44.2
Understanding (12)	4.8	2.8	40.0
Application (9)	3.3	2.3	25.6
Total (40)	16.5	8.1	41.2

The percentage means were in the expected direction. The young pupils were still learning to apply knowledge.

Table 19.8

ACHIEVEMENT IN ARITHMETIC — TOPIC-WISE

Topic	Mean	SD	Mean as Percentage
Time (3)	1.2	1.0	40.0
Factors and Multiples (7)	2.4	1.6	34.3
Fundamental Operations (12)	4.8	2.9	40.3
Weights and Measures (3)	1.3	1.0	43.3
Fractions (5)	2.0	1.4	40.0
Decimals (7)	3.1	1.7	44.3
Unitary Method	1.8	1.0	60.0
plus Others (3)			
Total (40)	16.5	8.1	41.2

The percentage mean was lowest for Factors and Multiples, it is likely that the children had been introduced to this topic in Class IV only and were still struggling to get grasp it — to whatever extent they could do. The highest mean was for items categorised under Unitary Method which is taught by introducing the rules quite early. The numbers involved in these questions were kept quite small to avoid interference from the skills to compute.

Table 19.9ACHIEVEMENTS IN READING COMPREHENSION
OBJECTIVE-WISE

Objective	Mean	SD	Mean as Percentage
Noting Detail (17)	8.1	4.0	47.6
Simple Comprehension ¹⁰ (13)	5.1	3.1	39.2
Inference ¹¹ (14)	4.3	2.5	30.7
Total (44)	17.5	8.6	39.8

Once again, the means were in the expected direction, the more complex competency having the lowest mean. The mean score for Noting Detail was disappointing.

Table 19.10

DIFFERENCES IN ACHIEVEMENT — LOCATION-WISE

Test	Location	Mean	SD	t
Arith	U	15.1	7.7	7.70*
	R	17.0	8.2	
RC(P)	U	16.8	8.3	3.64*
	R	17.8	8.7	
RC(S)	U	5.8	3.4	3.80*
	R	6.2	3.7	
W.K.	U	19.1	8.3	2.47*
	R	19.7	8.0	
A.W.	U	8.3	4.0	.76
	R	8.4	4.3	
S.S.	U	10.6	4.9	1.39
	R	10.4	4.6	
Spelling	U	13.3	5.9	3.50*
	R	12.7	6.2	
RC (total)	U	22.6	11.0	3.99*
	R	24.0	11.4	
T (5 + 6 + 7)	U	32.2	12.6	1.95
	R	31.4	12.8	

Urban - 1411 Rural - 3866

p < .05, * p < .01

Rural children achieved higher than the urban group in tests in arithmetic, reading comprehension and vocabulary (W.K.), but were not different from the urban group on tests designed for choosing the most appropriate

Table 19.11

DIFFERENCES IN ACHIEVEMENT -- GENDER-WISE

Test	Gender	Mean	SD	t
Arith	B	16.5	8.1	10
	G	16.5	8.2	
RC(P)	B	17.4	8.5	80
	G	17.6	8.7	
RC(S)	B	6.1	3.6	1.55
	G	6.2	3.7	
W.K.	B	20.0	7.9	4.50**
	G	19.0	8.2	
A.W.	B	8.4	4.2	10
	G	8.4	4.3	
S.S.	B	10.3	4.7	1.28
	G	10.5	4.7	
Spelling	B	12.7	6.0	2.08
	G	13.0	6.3	
RC (total)	B	23.5	11.0	1.10
	G	23.8	11.5	
T (5+6+7)	B	31.4	12.5	1.44
	G	31.9	13.0	

Boys - 2771 Girls - 2506

p < .05, * p < .01

ate word or the correct structure of a sentence. Their achievement in spelling was poorer. The achievements on tests for Appropriate Word and Sentence Structure were more likely to be influenced by the exposure to language in informal situations.

There were no differences in the achievements of boys and girls in Tamil Nadu except on the test on Word Knowledge where the difference was found to be significant though practically not very large. It may be repeated that the proportion of girl students in primary schools was quite high in the State (47.5%), indicating absence of bias against enrolment of girls.

Table 19.12

DIFFERENCES IN ACHIEVEMENT — CASTE-WISE

Test	Group	Mean	SD	F
Arith	SC	16.1	8.0	23.3**
	ST	12.2	5.6	
	BC	16.9	8.2	
	Others	13.3	6.8	
	RC(P)	17.3	8.6	
RC(P)	ST	13.9	5.9	7.75
	BC	17.7	8.7	
	Others	16.5	7.5	
	RC(S)	5.9	3.4	
	ST	4.2	2.1	
RC(S)	BC	6.3	3.7	14.35
	Others	5.7	3.5	
	W.K.	19.0	8.1	
	ST	18.2	6.0	
	BC	19.8	8.1	
W.K.	Others	19.0	7.9	4.10*
	A.W.	8.2	4.1	
	ST	6.9	3.0	
	BC	8.5	4.3	
	Others	7.8	4.0	
S.S.	SC	10.2	4.7	15.20*
	ST	7.7	3.6	
	BC	10.6	4.7	
	Others	9.7	5.1	
	Spelling	12.5	6.2	
Spelling	ST	9.1	5.3	15.45*
	BC	13.0	6.1	
	Others	13.5	5.9	
	RC (total)	23.2	11.1	
	ST	18.1	6.8	
RC (total)	BC	24.0	11.5	10.92**
	Others	22.1	10.2	
	T (5+6+7)	30.9	12.6	
	ST	23.7	9.8	
	BC	32.1	12.8	
T (5+6+7)	Others	31.0	13.3	16.4**

SC - 1233 ST - 99 BC - 3761 Others - 184

p < .01

The pattern of achievement was the same for six out of seven tests with Backward Classes getting the highest score, followed by Scheduled Castes, 'Others' and Scheduled Tribes. Apart from the ranking, the Scheduled Tribes

had much lower scores, the number of pupils was also very small — 99 as against 3,761 children of the Backward Classes. The most predominant group also achieved the highest. But the picture changed for the test in spelling where the 'Others' jumped to the first rank, followed by BC, SC and ST. In the total scores for reading comprehension and skills for writing, BC achieved the highest but 'Others' improved their rank in writing skills in comparison to SC children.

The differences were the least in the test on Word Knowledge.

Factors Related to Pupil Achievement

Personal data with respect to age, gender, caste and the home background variables were regressed with scores on Reading Comprehension and Arithmetic (respectively) with a view to understand their impact on pupil achievement. Before this analysis, data on interrelated variables were combined to obtain composite scores on 'Home Background', 'Facilities for Learning' and 'Educational Environment at Home'. The composite scores were obtained by using appropriate weights for the several variables as would maximise the correlation between the derived scores and the criterion variable.

The regression coefficients for the variables entered in the three composite variables are given below.

Home Background

	RC	Arith
Location	1.33	1.65
Father's Occupation	-.62	-.39
Caste	.14	.18
Father's Education	-.01	-.21
Mother's Education	.70	.10
Number of Siblings	-.73	-.42
R	.14	.14

* $p < .01$

The variables which contributed most to differences in achievement in school were the area (urban or rural) where the family resided, father's occupation and the size of the family. Father's education did not appear to be significant; its zero-order correlation with father's occupation was also small. Mother's education had, however, registered some contribution towards achievement in reading comprehension.

The most important facilitators of achievement in school were attending pre-school, availability of study material such as something to write on or with, time spent in helping parents, and regular attendance in school.

Achievement in arithmetic was also affected by the availability of textbooks and help available at home in completing the homework. The latter would probably go beyond 'help' and might mean 'tutoring' by the family. A significant contribution by the time spent in 'Helping Household' was difficult to understand.

Facilities for Learning

	RC	Arith
Attended Pre-school	1.44	.82
Place for Study	-.95	-.65
Help in Homework	-.15	-.96
Availability of Textbooks	-.06	.91
Availability of Study Material	-.52	-.87
Helping Household	1.17	1.51
Regularity in Attendance	2.87	1.92
R	.11	.18

* $p < .05$, * $p < .01$

Educational Environment at Home

	RC	Arith
Newspaper at Home	.79	-.26
Magazines at Home	.13	-.32
Books at Home	-.53	-.56
Reads Books	.65	-.12
R	.01	.05

None of the regression coefficients were significant, all the variables in this group had positive zero-order correlations with each other, ranging from .21 to .51, but their impact on achievement in expected learning in school was not significant.

The three composite variables derived with Reading Comprehension as the criterion, along with five others, were regressed with achievement in reading comprehension and arithmetic separately, their contribution to variance in criterion variables is given below.

Table 19.13(a)

CONTRIBUTION OF PUPIL-RELATED VARIABLES TO ACHIEVEMENT IN READING COMPREHENSION

Variable	R	R ²	Increment in R ²	F	p
Word Knowledge	.3758	.1412	.1412	867.58	.38
Facilities for Learning	.3891	.1514	.0102	63.11	.15
Home Background	.4013	.1610	.0096	61.10	.14
Time Watch TV	.4043	.1635	.0025	14.51	.04
Gender	.4061	.1649	.0014	9.15	.02
Similar Language	.4067	.1653	.0004	4.02	.03
Age	.4071	.1658	.0005	2.71	.03
Educational Environment	.407	.1658	.0000	-	.03

* $p < .01$

Table 19.13 (b)CONTRIBUTION OF PUPIL-RELATED VARIABLES
TO ACHIEVEMENT IN ARITHMETIC

Variable	R	R ²	Increment in R ²	F	p
Word Knowledge	.3697	.1367	.1367	835.25*	.37
Time Watch TV	.3887	.1511	.0144	89.51*	.12
Facilities for Learning	.4048	.1638	.0127	80.33*	.16
Home Background	.4123	.1700	.0061	38.94	.11
Similar Language	.4153	.1725	.0025	16.31	.06
Educational Environment	.4168	.1737	.0012	7.78	.02
Gender	.4177	.1745	.0008	5.00*	.00
Age	.4178	.1745	.0000	12	.01

* p < .05, p < .01

Age did not contribute to variation in the achievements of pupils in either of the two criteria in the State. All other variables made a statistically significant increment to R² in relation to arithmetic but 'Similar Language' and 'Educational Environment at Home' made no contribution to the learning of language. Only 6% of the children reported their spoken language to be some other than Tamil, it did not affect the learning of language at school. Its influence on learning arithmetic was not easy to explain, unless a particular language group (non-Tamil speaking) had some specific characteristics which gave rise to this difference.

Newspapers and magazines were received in barely 12% of the homes and 86% had no books, but 20% children said they did read something other than textbooks. As in the case of 'Similarity of Language', 'Educational Environment at Home' made some difference to achievement in arithmetic but not in language. A likely reason could be concern of the 'educated' family with arithmetic and the taken-for-granted attitude towards the mother tongue.

After Word Knowledge, that stands for differences in the ability levels of the pupils, the other variables making significant contributions to variance were 'Facilities for Learning', 'Home Background' and 'Time Watch TV'; the corresponding zero-order correlations were also higher than for other variables. More time spent on watching TV¹² tended to affect the learning of school tasks; 'r' was smaller for reading comprehension. Being a boy or a girl also made some difference.

The variance explained by this set of variables was slightly higher for arithmetic but quite small (17%) on the average.

The impact of 'Home Background' variables on the achievement of pupils was studied in Tables 19.13(a) and 19.13(b). While 17% R² for Arithmetic was very close to the country median, 16.5% for Reading Comprehension was much lower than the corresponding average for all States. Both the values were quite low, pointing to limited influence of the home on the achievement of the children. Although the State had the third¹³ highest rate of literacy (63.7%), the families did not seem to affect learning of school-related tasks by the pupils.

The school means differed from each other only a little less widely than the scores of the pupils. The standard deviation of 285 — means in the test of arithmetic was 7.2 compared to 8.1 of the scores of more than 5,200 student¹⁴. The school-related variables were regressed against achievements of pupils on the two criteria identified.

Table 19.14(a)CONTRIBUTION OF SCHOOL-RELATED VARIABLES
TO ACHIEVEMENT IN READING COMPREHENSION

Variable	R	R ²	Increment in R ²	F	p
PTA	.1418	.0201	.0201	5.82	.14
Time Given (Arith.)	.1868	.0349	.0148	4.32	.14
Exp. as Headmaster	.2161	.0467	.0118	3.48	.12
Special Projects	.2377	.0565	.0098	2.90	.10
Time Given (Language)	.2504	.0627	.0062	1.84	.11

p < .05

Table 19.14(b)CONTRIBUTION OF SCHOOL-RELATED VARIABLES
TO ACHIEVEMENT IN ARITHMETIC

Variables	R	R ²	Increment in R ²	F	p
Experience as Headmaster	.1688	.0285	.0285	8.32*	.17
PTA	.2145	.0460	.0174	4.69	.15
Proportion SC/ST	.2364	.0559	.0099	2.95	.11
Operation Blackboard	.2557	.0654	.0095	2.85	.07
Rooms per Class	.2792	.0752	.0098	2.96	.09
Group	.2927	.0857	.0105	3.20	.11
Teachers Untrained	.3059	.0936	.0079	2.42	.10
Special Projects	.3187	.1016	.0080	2.46	.08
Time Given (Language)	.3288	.1081	.0065	2.01	.09
No Detention Policy					

* p < .05, p < .01

12 In Tamil Nadu, 32% of the children watched TV for some time varying from 1/2 hour to more than two hours every day.

13 Goa has been ignored as it was a Union Territory till only a few years ago.

14 Both the statistics were higher than the country medians, the former to a much larger extent.

Although all the 31 variables given in the list at the end of the report were regressed with the two criteria, in the two tables given above only those which contributed statistically significant increment to R^2 and a few more down the line were retained. The total contribution to R^2 for Reading Comprehension was 10.7%, and that for Arithmetic, 14.2%. Both the values were lower than the corresponding country medians. Compared to the other States, the lesser proportion of variance arising out of differences between schools was attributable to the independent variables explored in this study rather than to the variability related to conditions at home.

Referring back to the write-up describing the schools in this sample, it could be said that there were enough apparent differences on the variables on which data were collected. Obviously, the more significant ones had eluded the researchers.

Nearly the same percentage of variance was explained by the pupil-background related variables for both the criteria, but when it came to school variables, a higher R^2 was obtained for Arithmetic. It was hypothesised that the home would play a more important role in the learning of language while the influence of the school would be more prominent in differences in achievement in arithmetic. The latter proved true in the State, but not the former. It may be recalled that according to the information provided by the children, 86% of the homes had no books other than textbooks. Related to this were also the responses of 80% children saying they did not read anything besides what was required for their studies. Only 12% families received newspapers or magazines. Perhaps the support system did not vary much among the homes.

Only the existence (perhaps the influence) of the

Parent Teacher Association made consistent significant contributions to R^2 s for both the criteria. The existence of a PTA was reported by 89% schools, and then being active was mentioned by 72%. It is likely that the Associations exerted pressure on/helped schools to carry out their tasks properly.

'Time given to Arithmetic' also contributed significant R^2 for Reading Comprehension but this was not easy to explain. Its counterpart, 'Time Given to Language', also made some contribution to R^2 related to Arithmetic; it was not statistically significant but the signs of all the four 't's (one does not appear in the two tables) were negative, implying longer time devoted to the teaching of one subject resulting in lower school means to the other. The values of 't's were small varying between -.06 to -.14. It was likely that middle (15%) and secondary (2%) schools had longer school hours but their children in the primary sections had poorer achievements¹⁵.

'Experience as Headmaster' made the maximum contribution to differences in achievement in Arithmetic. It was of some importance for Reading Comprehension as well, suggesting that generally the experienced headmaster managed better achievements of students in his school (The statement should be interpreted in the light of the low correlations of .12 and .17 only.)

'Proportion of SC/ST' pupils in a school also had some impact on its achievement.

Both the home-related and school-related variables explored in this study had only a moderate influence on the achievements of the pupils. Though variation was found among pupils (as would be expected) and schools, but significant variables associated with these differences could not be identified.

¹⁵ Lower averages of children of primary sections attached to middle and secondary schools were noticed in Rajasthan, Nagaland and Meghalaya. The data from Tamil Nadu was not studied along these lines.

Table 19-A

INTER CORRELATIONS OF PUPIL-RELATED VARIABLES AND ACHIEVEMENT

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	
1	100	-07	-04	-13	-02	06	-28	-18	-20	-04	.04	-12	02	-06	06	-07	-23	-17	-12	-16	-23	11	05	05	03	01	-02	-05	06	39	-11	-18
2	100	-04	-01	-03	-04	03	-03	-06	05	01	-01	-03	-00	-04	03	03	03	-02	03	06	01	03	01	04	03	04	-00	03	-06	02	09	
3	100	01	04	-03	01	09	09	05	00	04	-01	01	-03	02	07	07	06	02	03	00	01	02	-06	-00	02	03	02	00	01	03		
4	100	-06	-05	-02	-18	-07	-00	-08	-05	-09	-17	03	-10	-08	-11	-11	-06	-07	-09	-10	-10	-07	-03	-06	-06	-11	-76	-03	-04			
5	100	-04	05	12	11	07	05	06	-01	06	03	-01	03	06	06	07	09	02	02	04	04	03	03	05	03	18	-01	04				
6	100	03	00	-03	-01	-02	-00	-02	-01	03	02	-03	-03	-03	-05	-05	06	03	03	-00	01	02	00	03	05	04	-03					
7	100	14	14	-04	09	11	-03	02	-04	06	15	15	13	14	11	03	03	08	08	05	08	08	05	-01	34	12						
8	100	50	-02	16	27	.02	11	03	06	26	26	29	.22	20	-02	04	02	09	02	10	13	04	27	05	18							
9	100	-03	13	.24	01	06	03	01	.23	23	25	19	16	-01	06	04	07	03	11	13	06	41	02	16								
10	100	-02	.00	-03	-05	-07	00	03	04	02	-05	01	-04	-04	-06	-04	-04	-02	-03	-05	-36	-02	-01									
11	100	22	04	07	-01	04	19	19	21	15	14	-03	-01	-02	01	01	01	02	-02	10	-13	12										
12	100	07	04	01	04	19	21	20	18	20	-05	-00	-00	02	-03	-01	-01	-00	09	-01	16											
13	100	.29	.04	19	.03	06	.06	02	05	05	00	03	07	00	01	.02	01	.08	07	02												
14	100	04	21	.05	10	.08	11	15	-04	-01	-00	-07	-06	-03	00	-01	13	-04	06													
15	100	.07	-04	-03	-08	-11	-10	10	06	04	05	02	01	02	06	04	40	-04														
16	100	06	05	.02	.02	07	12	11	.12	08	08	09	12	12	04	83	05															
17	100	.50	40	29	19	-03	02	03	04	02	07	08	03	06	04	60																
18	100	51	34	21	-04	02	02	05	-00	07	08	02	10	03	46																	
19	100	.43	21	-05	00	00	06	03	06	09	00	13	-03	09																		
20	100	23	-03	03	01	10	05	14	15	02	08	-04	55																			
21	100	-12	-05	-02	01	-04	00	02	-04	03	-01	16																				
22	100	61	55	37	47	45	43	64	11	16	-02																					
23	100	66	.35	47	46	44	97	12	.13	03																						
24	100	33	43	38	36	82	13	15	03																							
25	100	46	44	45	38	10	12	04																								
26	100	50	47	.49	05	11	02																									
27	100	71	47	08	11	08																										
28	100	45	08	12	08																											
29	100	14	15	03																												
30	100	02	16																													
31	100	09																														
32	100																															

Table 19-B

INTR CORRELATIONS OF SCHOOL-RELATED VARIABLES AND ACHIEVEMENT

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
1	1 00	12	05	11	11	01	-00	-11	54	05	-00	-14	06	06	-07	10	-23	-24	13	05	-20	-01	08	03	-09	-01	-07	03	15	-10	-10	01	01	-01	-01	06	01	-05	01
2	1 00	33	23	-10	-13	01	01	-01	14	07	10	-01	-03	05	-01	01	10	-02	-12	-01	-03	00	02	-00	04	02	-07	-13	07	07	05	02	03	-01	09	04	01	02	
3	1 00	32	02	-18	-03	-08	15	17	00	01	10	03	-12	02	-03	-04	-11	-13	-24	-06	-10	07	-11	-07	10	-12	-12	-09	10	16	07	11	06	09	01	01	09		
4	1 00	17	-07	-07	-01	08	22	-02	-07	07	-01	-14	04	-01	-20	01	02	-12	12	02	05	10	07	-03	-00	-14	11	-03	17	11	13	15	17	14	08	12			
5	1 00	-21	-01	-19	16	-16	-11	-9	11	-08	04	08	-18	-50	-11	-03	-25	01	05	23	-22	12	-03	08	11	06	-00	-04	02	-02	-00	-01	15	16	01				
6	1 00	-19	24	-02	12	06	35	-06	-06	-03	-26	-25	-20	17	32	23	25	00	-11	-46	20	-03	-08	11	06	-00	-04	02	-02	-00	-01	15	16	01					
7	1 00	-22	01	-01	-01	-01	-12	-00	-02	01	05	-01	-16	-01	-05	-09	-05	-00	08	-26	-07	-01	-01	-01	-06	01	-05	-00	-02	01	00	-10	-10	-01					
8	1 00	-14	-03	06	31	-06	-02	05	-10	20	27	02	08	01	01	02	-15	26	08	11	06	11	-02	-05	-01	-03	-01	-06	02	03	07	-02							
9	1 00	05	04	-19	06	03	-07	08	-29	-38	23	12	-33	-01	04	01	-15	-02	-05	-05	17	-07	02	03	04	05	-06	-04	-07	05									
10	1 00	09	12	00	05	-03	-19	13	10	11	04	06	17	-01	-06	08	05	-02	-19	02	31	02	13	07	07	03	09	11	11	07									
11	1 00	04	-08	-07	04	-05	05	-04	-03	-08	-09	-07	-09	02	07	-03	-07	07	01	00	05	09	04	08	06	07	07	08											
12	1 00	-16	-00	-05	-13	26	54	04	-02	21	11	-10	-24	54	06	16	02	-02	04	04	-09	-06	-04	05	02	-19	-21	-06											
13	1 00	01	02	14	-09	-08	-01	-01	-03	04	-03	-04	-01	-13	-05	-01	-03	02	-03	11	03	03	-15	16	14	12	01												
14	1 00	-10	03	04	02	-06	-10	-02	-04	04	-13	-07	-11	-07	-07	07	-03	-06	-04	02	-05	-01	-12	-11	-02														
15	1 00	-07	05	04	07	-03	02	-06	00	-00	01	08	03	-01	-00	03	-00	-11	01	01	12	12	11	15	01														
16	1 00	-28	05	11	03	-08	-09	-00	-05	-10	12	-10	-05	-17	-03	-02	-06	-11	-08	06	-06	-06	-13	-10															
17	1 00	-28	-02	-04	-17	11	-04	-10	21	05	12	-02	09	10	-06	-09	-08	-03	-04	-03	-01	00	-07																
18	1 00	18	12	30	14	-03	-11	10	07	08	01	-01	08	-01	-01	00	03	08	07	16	20	01																	
19	1 00	56	01	11	13	07	19	05	00	-11	09	06	-14	01	09	05	00	03	11	11	08																		
20	1 00	11	22	02	17	21	13	-06	-10	19	08	-05	04	10	07	02	01	14	11	09																			
21	1 00	03	-01	-02	20	06	12	-05	05	07	07	-01	-06	-02	05	01	09	08	-05																				
22	1 00	-05	01	19	13	08	-02	13	11	07	-01	-05	08	04	04	08	12	06																					
23	1 00	09	-06	09	04	06	-03	05	-02	09	01	03	00	02	04	-06	01																						
24	1 00	-03	03	-09	-04	-01	07	-02	-01	-03	-05	-02	-09	-09	-14	-01																							
25	1 00	16	07	-03	00	06	-00	-03	00	00	-03	00	00	07	-02	14	16	00																					
26	1 00	10	-01	-03	-01	03	02	03	-01	03	02	03	04	11	01	11	15	04																					
27	1 00	-17	-02	07	06	-08	-12	-07	06	-08	-12	-07	-05	-06	-03	-02	-11																						
28	1 00	-05	14	02	-06	-14	-11	-14	-10	-11	-14	-10	-11	-14																									
29	1 00	-02	-01	07	05	08	-01	07	05	08	-01	01	10	11	06																								
30	1 00	08	15	13	16	09	17	14	14																														
31	1 00	10	11	08	04	01	12	08	10																														
32	1 00	-1	70	52	02	59	59	71																															
33	1 00	-8	18	61	59	98																																	
34	1 00	17	57	53	89																																		
35	1 00	67	61	62	50																																		
36	1 00	08	65	63																																			
37	1 00	86	60																																				
38	1 00	60																																					
39	1 00																																						

Tripura

Tripura was allocated a sample of approximately 1,500 pupils to be selected from 70 or 80 schools. The State was not divided into any regions, the schools were selected from the capital city and the rest of the State.

Table 20.1

SAMPLES PLANNED AND ENTERED IN ANALYSES

Regions	No. of Schools		No. of Pupils	
Capital City	7 ¹		175	
		9 ²	138	
Rest of the State	61		1311	
		78	916	
Total	71		1519	
		87	1051 ³	

Nearly one-third of the sample of schools originally selected was replaced in the State. New schools had to be submitted for the ones in the original list where: (i) the medium of instruction was other than Bengali; (ii) the number of pupils on the roll was less than five in Class IV. While the first was necessary, the second was recommended for reasons of economy as the schools were not easy to reach and the attendance very short of the enrolment. The difference between enrolment and attendance was confirmed by the fact that the State centre approached 22% more schools — 87 instead of the 71 planned — and ended with 70% of the estimated sample of pupils.

The capital city would have provided 11% of the total sample but in the final analysis it worked out to be 13%. The percentage attendance in schools was likely to be higher in a big city than in rural areas or small towns. It, however, gave an advantage (a small one) to the overall average of the State as the difference between the mean achievements of children from the capital city and the rest of the State was substantial and in favour of the former.

¹ The number planned.

² The number entered in analyses.

³ In addition, fifty-five pupils of Class V were also administered tests.

Source

⁴ The School Questionnaire.

⁵ The Pupil Questionnaire.

⁶ The Teacher Questionnaire.

⁷ The State Coordinator observed: "The sample of respondents (teachers) drawn for the study was biased. The percentage of teachers who have undergone professional training of one academic session is only 30% in Tripura (at primary stage)."

Some of the statistics available from the obtained sample were compared with the same as recorded in the Fifth All India Educational Survey conducted by the NCERT in 1986.

Table 20.2

SAMPLE AS COMPARED TO THE POPULATION

Variable	Percentage	
	1986 Survey	Sample in the Study
Primary (only) Schools	75.5	71.4 ¹
Girl Students	44.6	45.1 ⁵
Scheduled Caste Students	17.7	18.6 ⁵
Scheduled Tribe Students	28.8	30.1 ⁵
Women Teachers	21.9	27.2 ⁶
Trained Teachers	40.4	72.6 ¹

Two things were noticeable in Table 20.2. The differences in the statistics from the sample selected for this study and the ones recorded in the Survey of 1986 were small except in the case of trained teachers. Secondly, all the differences were in the expected direction of change. The one per cent reduction in the number of primary schools could be due to upgradation of some of the schools. A small increase in the percentage of girls, Scheduled Caste and Scheduled Tribe pupils should be expected. More women teachers could be in accordance with (i) the increasing number of women seeking employment, (ii) the New Policy of Education (1986) wherein it had been said that the second teacher to be recruited in one-teacher-schools should preferably be a woman. The percentage of trained teachers jumped rather dramatically. The increase could be either due to a rapid increase in the recruitment of (trained) teachers or bias in the selection of respondents from the schools.⁷

The Tests in Tripura

Like many other States in the country, Tripura is also a multilingual State, it undertook to test the pupils who were being taught through the medium of Bengali. The tests were thus translated into Bengali. It may be recalled that the States were requested to prepare their own tests for Sentence Structure and Spelling. They also had the freedom to test in any other subject in this slot. Tripura chose to test achievement in science. The statistics for these two tests were, therefore, not comparable with the statistics from other States.

The State participated in the try-out of tests and had the advantage of improving on its translations as well as influencing the selection of items which would be fair to its children.

The tests proved quite difficult for the children as was clear from the spread of the Difficulty Values of the items, only 12% of the items had a pass percentage of 50% and above. The median pass percentages were (approximately) 30% or less, with the exception of the test in Word Knowledge, which was most susceptible to change in difficulty level in the process of translation.

Table 20.3

DIFFICULTY VALUES OF THE ITEMS

Pass Percentage	Arith	RC(P)	RC(S)	W.K	A.W	Sci 1 ⁸	Sci 2 ⁹
0 - 9						2	
10 - 19	10	5	3		3	1	5
20 - 29	15	17	4		6	6	7
30 - 39	6	12	7	11	11	1	6
40 - 49	4	8	1	20	3	3	5
50 - 59	4	2	1	7	1	1	2
60 - 69	1			2		3	
70 - 79						1	
Median	26.2	29.5	30.9	44.0	32.2	29.5	30.3

The two tests prepared by the State itself also proved difficult. The test in arithmetic had the highest concentration of low pass percentages. Lower mean achievement in arithmetic, as compared to language, has also been seen in the selection tests conducted for admission to the Navodaya Vidyalayas in Tripura. In contrast to most other States, the Discriminating Indices were also low in Tripura, varying between 30% to 41% only.

The Groups in the Study

The Pupils

The data were available from 1,054 pupils who had studied up to Class IV in the formal school system. The average age of the pupils in the sample was 10.6 years.

more as compared to many other States. Eighty-five per cent of these pupils belonged to rural areas, 45% were girls. The percentage belonging to SC, ST, BC and Others were 19%, 30%, 2% and 49%, respectively.

Forty-one per cent of the children came from families which were engaged in farming, less than 7% children reported their fathers to be professionals or earning high salaries. The percentage of unskilled workers was 14% with another 12% uncategorised which would include those unemployed also. Sixty-eight per cent fathers and 73% mothers were either illiterate or had studied only up to Class V, on the other side, 4% fathers and 3% mothers were graduates. Forty-eight per cent of the children came from families with four or more children. As compared with other States, the percentage for large families was somewhat higher, so was the proportion of ST families.

Forty-nine per cent children had attended some kind of pre-school. Thirty-five per cent of the sample reported the language spoken by them at home to be different from the medium of instruction of the school⁹, namely, Bengali. Twenty-four per cent children did not have all (or most) textbooks, inadequate availability of writing material was reported by 32%. Forty-four per cent children helped their families with domestic work (including family business/labour etc.) for two or more hours every day, the percentage was much higher than in other States.

More than 50% children said they received help from their families in doing their homework, 24% had some place where they could sit and study. Only 50% children could attend school regularly, 4% had to miss it frequently.

A newspaper was received in 22% of the homes, and magazines by 12%. Sixty-five per cent of the families had no books other than the textbooks.

Thirty-three per cent children said they read some extra books; only 10% watched TV for one or more hours daily, 80% had no access to it.

On the whole, the sample of pupils from Tripura had some handicaps, a larger (as compared to the other States) proportion was from rural areas, nearly 60% belonged to SC/ST groups and 35% reported their home-language to be different from the medium of instruction. On the positive side, more than 50% received help in studies from their families and 30% read something other than their textbooks.

The Teachers

One hundred and seventy-six teachers responded to the Teacher Questionnaire. The following statistics are

⁸ Prepared by the Bureau of Educational and Vocational Guidance, Agartala, Tripura.

⁹ May be seen in light of large proportion of tribal children.

based on the data supplied by them. Eighty-six per cent of the teachers were from rural schools, 27% were women. A large percentage (43%) were quite young, being less than 35 years of age, correspondingly 61% of them had taught school for less than 10 years. Nearly three-fourths of the teachers had studied up to the senior secondary level (Class XI or XII), 12.5% had not completed their matriculation, another 14% were graduates. As far as professional education is concerned, 80% had received only a one year training; another 14% marked the choice 'any other', which could include absence of training as well. Five per cent teachers had a B.Ed. (one year) degree, a programme that prepares teachers for teaching Classes VI and above. Sixty-eight per cent teachers had not received any in-service education, this may be seen in light of the fact that 61% had been in service for less than 10 years.

Only 60% of the teachers resided very close to their schools needing an hour or less to travel from and to their residence. Twenty per cent had to spend more than two hours every day for this purpose.

A small percentage (18%) of teachers had their own copies of the textbooks, another 15% had access to library copies but a large majority of 67% borrowed them from the pupils, most likely at the time of teaching. In contrast, a larger percentage (33.5%) reported having their own copy of a dictionary but 54.5% had no access to a language (medium of instruction) dictionary.

In spite of poor availability of basic material such as textbooks, 70% teachers¹⁰ reported adopting new practices for teaching but only about one-third of all teachers reported better achievements of pupils or more interest on their part as a result thereof. In line with 70% adopting some new practices for teaching, 69% reported using some study material other than textbooks, either often or sometimes; only 44% developed some of it themselves; 35% had even involved their pupils in this task.

Thirty-eight per cent teachers said they evaluated pupils every month while a majority of 59% followed the most prevalent practice of 2-3 evaluations during the year. Three per cent did it only once a year. Even if frequent evaluations were conducted by 60% of the teachers, the multipurpose use of such evaluation was not made (understood?) by the teachers; 57% reported using it for only one of the three purposes listed (it is most likely to have been used for promotion); 42% teachers, however made better use of it. Eighty-five per

cent of teachers checked homework regularly, with a small 2% saying they did it rarely. A fairly substantial (16.4%) percentage of teachers asked parents of slow learning students to arrange for extra tuition instead of accepting this responsibility. Ten per cent teachers said students rarely asked any questions in the class.

Most of the teachers in primary schools in Tripura had received only one year of professional education. Many of them were quite young, only a small percentage had their own copies of textbooks or access to a dictionary. About two-thirds of them reported adopting new practices in teaching.

The Headmasters

Of the 91 headmasters who responded to the School Questionnaire, 18% could be considered young, being 35 years or less in age. Another 15% were more than 50 years old. All head teachers had taught for at least five years but 37% had been in this position for less than five years. A fairly high percentage (30%) of headmasters were untrained; 7% had a B.Ed. degree.¹¹ Comparable to the response from the teachers, 61% of the headmasters had only one year of professional training.

The Schools

A very large percentage (91%) of the schools were located in the rural areas, 75% were managed by the government--State or central-- and another 20% were being run by local bodies. There was a small percentage (5.5%) of schools which were private or private aided. All schools were co-educational. Seventy-one per cent had been there for more than 20 years; the rest had come into existence during the last two decades.

Regarding physical facilities, only 13% of the schools had a room, namely, an office, for the headmaster; that too, when 28% of the schools were either secondary or middle schools, which usually have an office for the headmaster. In contrast, a staff room was available in 19% of the schools. It is likely that in some schools, a room doubled for the head teacher as well as the teachers, to sit and work or rest in. Drinking-water was available in 49% of the schools but separate urinals for girls were there in only 13% schools. The Pre-primary sections in schools were nearly non-existent. Some of the children coming from urban areas, the proportion for which was quite small, could have access to pre-primary education. 'No-Detention Policy' was not followed by

10 The State Coordinator observed "The information furnished by teachers correcting homework, adopting, innovative practices, etc., is at variance with the experience of the supervisory officers, guardians and others related."

11 A near equal percentage of 7.7% of schools in this sample had Classes I to X/XII, and another 20%, Classes I to VIII. The headmasters (or principals) of the middle/secondary schools would be graduates with a B.Ed. degree. It is not known whether the Questionnaire was responded to by the head of the primary section (if there was one) or the headmaster of the entire school.

64% schools,¹² but 23% schools reported it being practised upto Class III. There was no Book Bank in 92% of the schools, 'Operation Black-board' had not touched 85% of the schools.

Forty-five per cent of the schools had a Parent Teacher Association, two-thirds of these held more than one meeting of the PTA during the year.

Achievements of the Pupils

One thousand and fifty-four pupils of Class IV were administered the test battery. The data have been presented in the following tables.

Table 20.4

MEAN ACHIEVEMENTS OF PUPILS

Tests	Arith (40) ¹³	RC(P) (44)	RC(S) (16)	W K (10)	A W (24)	SC1 (18)	SC2 (25)	Total (207)
Mean	12.1	14.0	5.0	17.9	8.0	6.8	8.0	71.8
SD	5.0	6.1	2.7	6.7	3.6	2.4	3.1	
Mean as Percentage	30.2	31.8	31.2	44.8	33.3	47.7	32.0	34.7
KR-20	71	77	58	81	62	44	52	
All India	11.2	45.4	43.1	19.5	11.7	57.8 ¹⁴	42.8 ¹⁴	45.2
Median as Percentage								

With the exception of the test on Word Knowledge none of the averages went beyond 38%, with the median at 32%. This aspect has been commented in the section "The Tests in Tripura". All the reliability coefficients were also low. The lowest were for the tests constructed by the State. The least mean was in arithmetic, followed closely by the tests in reading comprehension. In comparison with other States, the achievements in Tripura were among the lowest.

Tripura did not administer tests on a sample of the next higher class, thus, data on achievement in a year were not available.

Table 20.5

MEAN ACHIEVEMENT OF PUPILS — REGION-WISE

Region		Arith	RC(P)	RC(S)	W K	A W	SC1	SC2	Total
Capital City (136)	Mean	12.2	17.9	5.6	19.0	10.6	8.2	8.6	82.3
	SD	5.2	8.0	3.1	6.9	3.9	2.6	3.5	
Rest of the State ¹⁵ (916)	Mean	12.1	13.4	4.9	17.7	7.6	6.6	7.8	70.1
	SD	5.0	5.5	2.6	6.7	3.3	2.4	3.0	

¹² The six per cent that did not respond to this question, could easily be an additional part of this statistic.

¹³ The maximum possible score.

¹⁴ The tests administered in Tripura were totally different from those used in other States. Tripura developed tests for evaluation achievement in Environmental Studies - II. Other States tested aspects of language.

¹⁵ The sample was selected from the Salema, Chawmanu and Kanchanpur Block.

¹⁶ The maximum possible score.

In all other States, the achievements of pupils were studied region-wise. Tripura did not give such divisions, information, therefore, was available only for the capital city and the rest of the State.

Once again the picture in Tripura was somewhat different than in many other States, with children of the capital city achieving a much higher aggregate score than the children in the rest of the State. Near 'No-difference' in the test in arithmetic was noticeable; otherwise, the differences and their direction were consistent. It is likely that the learning in arithmetic is less influenced by the environment, but the learning of language, as also general science, is influenced by a richer environment.

The achievement of children on two tests, namely, Arithmetic and Reading Comprehension (paragraphs), were also studied objective-wise, and in the case of Arithmetic, topic-wise as well.

Table 20.6

ACHIEVEMENT IN ARITHMETIC—OBJECTIVE-WISE

Objective	Mean	SD	Mean as Percentage
Knowledge (19) ¹⁶	6.0	2.7	41.6
Understanding (12)	3.8	2.1	31.7
Application (9)	2.2	1.5	24.4
Total (40)	12.1	5.0	30.2

The relatively lower percentage of score in 'Application' was in the expected direction, but a low percentage in 'Knowledge' indicated a poor teaching-learning situation.

Table 20.7

ACHIEVEMENT IN ARITHMETIC — TOPIC-WISE

Topic	Mean	SD	Mean as Percentage
Time (4)	1.0	.9	33.3
Factors and Multiples (7)	1.8	1.3	25.7
Fundamental Operations (12)	3.5	1.9	29.2
Weights and Measures (3)	.9	.8	30.0
Fractions (5)	1.2	1.0	24.0
Decimals (7)	2.2	1.4	31.1
Unitary Method plus Others (3)	1.5	1.0	50.0
Total (40)	12.1	5.0	30.2

The proportionate mean was highest for Unitary Method plus Others, two out of three items were on Unitary Method. It is felt that this method is most familiar to the children. It is also part of daily experiences.

related to purchases (in some cases sale as well). The lowest percentage scores were in Fractions and Factors and Multiples, both of these, particularly the latter, could be newly introduced topics. Better understanding may follow later. Achievement in Fundamental Operations was most disappointing. It was expected that after four years of school, most pupils would know the Fundamental Operations. Less than 30% achievement presented a very dismal picture. Although several questions in this area tested understanding and application of knowledge, even a simple item requiring addition of three numbers had a pass percentage of 67% only.

Table 20.8

ACHIEVEMENT IN READING COMPREHENSION
OBJECTIVE-WISE

Objective	Mean	SD	Mean as Percentage
Noting Detail (17)	6.6	3.2	38.8
Simple Comprehension ¹⁷ (13)	4.0	2.3	30.8
Inference ¹⁸ (14)	3.4	1.9	24.3
Total (44)	14.0	6.1	31.8

The differences in the mean achievements on the three objectives were in the expected direction. Drawing inference is a higher-level skill which probably is still being learnt, but a 39% score in noting details in simple write-ups in the mother tongue was disappointing. It might imply 'not able to read' on the part of some pupils. The cumulative frequency up to chance score of 11 was 34.5%.

Table 20.9

DIFFERENCES IN ACHIEVEMENT -- LOCATION-WISE

Test	Location	Mean	SD	t
Arith	U	12.0	5.1	0.10
	R	12.1	5.0	
RC(P)	U	17.4	8.0	7.83**
	R	13.4	5.5	
RC(S)	U	5.5	2.9	2.76
	R	4.9	2.6	
W.K.	U	18.8	7.1	1.78
	R	17.7	6.6	
A.W.	U	10.3	4.0	9.24*
	R	7.6	3.3	
Science-1	U	8.0	2.6	7.21
	R	6.5	2.4	
Science-2	U	9.5	3.4	6.39
	R	7.8	3.0	
RC (total)	U	22.9	10.0	7.43
	R	18.3	6.6	

Urban - 153 Rural - 901

** p < 01

The differences in the achievements of pupils when divided over location, gender and caste, were also studied. The relevant statistics are presented in Tables 20.9, 20.10 and 20.11.

With the exception of the test in arithmetic, the urban students achieve higher than rural students with five of the differences being statistically significant at the 1% level of confidence. The trend had become visible with clear differences in the capital city and the rest of the State where there would be a predominance of rural children.

The reasons of 'no difference' in the mean scores in arithmetic only were not clear.

Table 20.10

DIFFERENCES IN ACHIEVEMENT -- GENDER-WISE

Test	Gender	Mean	SD	t
Arith	B	12.5	5.0	3.03*
	G	11.5	5.0	
RC(P)	B	14.1	5.9	83
	G	13.8	6.2	
RC(S)	B	5.0	2.6	28
	G	4.9	2.8	
W.K.	B	18.6	6.1	4.03*
	G	16.9	7.2	
A.W.	B	7.9	3.5	65
	G	8.1	3.6	
Science-1	B	6.9	2.4	1.41
	G	6.6	2.4	
Science-2	B	8.1	3.3	63
	G	8.0	3.0	
RC (total)	B	19.1	7.3	78
	G	18.7	7.5	

Boys - 579, Girls - 475

** p < 01

All but one of the differences, namely, in the test on choice of Appropriate Word, were in favour of boys; only two of the differences were significant. The advantage in Tipura seemed to be distributed very much on traditional lines, with the urban group and boys having advantage over the rural group and girls. The achievement in arithmetic should be seen in this light. A significant favourable difference in Word Knowledge of the boys could be attributed to more exposure to media.

¹⁷ This includes (a) deriving the meaning of difficult words from the context, and (b) relating things at a simple level.

¹⁸ This includes identifying the message or the central idea, and the title of the passage.

communications, including printed material. But it had not, affected the score on Appropriate Word

Table 20.11

DIFFERENCES IN ACHIEVEMENT — CASTE-WISE

Test	Group	Mean	SD	t
Arith.	SC	12.3	5.4	69
	ST	12.0	4.7	
	BC	13.2	6.1	
	Others	12.0	5.0	
RC(P)	SC	14.5	6.1	5.23
	ST	13.0	4.7	
	BC	12.0	5.5	
	Others	14.5	6.7	
RC(S)	SC	4.6	2.6	1.69
	ST	5.0	2.7	
	BC	5.4	2.4	
	Others	5.1	2.7	
W.K.	SC	17.9	6.5	92
	ST	17.9	6.8	
	BC	15.7	6.6	
	Others	17.9	6.7	
A.W.	SC	8.1	3.5	9.90
	ST	7.2	3.1	
	BC	7.1	3.4	
	Others	8.5	3.7	
Science-1	SC	7.2	2.4	15.32
	ST	6.1	2.3	
	BC	5.6	1.8	
	Others	7.1	2.5	
Science-2	SC	7.9	2.8	8.58
	ST	7.4	3.0	
	BC	6.9	2.8	
	Others	8.5	3.3	
RC (total)	SC	19.1	7.3	3.01
	ST	18.0	6.0	
	BC	17.4	7.0	
	Others	19.5	8.1	

SC - 196, ST - 317, BC - 25, Others - 516

* $p < 0.05$, ** $p < 0.01$

Along the caste lines, 'Others' achieved the highest, with the SC group following it very closely. The group identified as 'Backward Castes' achieved the poorest; its number was also negligible. As the proportion of this group in the State population was not known, it could not be inferred whether the children were enrolled in comparable numbers. This group had the highest mean in arithmetic.

Factors Related to Pupil Achievement

Data regarding home background of the pupils, the facilities they have or had for better learning, the educational environment in their homes, and other personal data with respect to age, gender, caste, etc., were regressed against the two criterion variables, separately. Before this analysis, data on inter-related variables were combined to obtain composite scores on 'Home Back-

ground', 'Facilities for Learning' and 'Educational Environment at Home'. The regression coefficients for the variables entered in the three composite variables are given below.

Home Background

	RC	Arith
Location	-2.01**	1.26
Father's Occupation	-0.16	0.13
Caste	-0.28	-0.27
Father's Education	1.19*	0.54**
Mother's Education	0.67	0.39
Number of Siblings	-0.42	-0.30
R	0.35	0.18

* $p < 0.05$, ** $p < 0.01$

The three most important variables of the home background were 'Location', education of the father and education of the mother. A significant regression coefficient was noticed against caste as well. It may be recalled that against the general trend of low achievement, the Backward Classes' group had the highest achievement in arithmetic. The F was not significant, though.

Facilities for Learning

	RC	Arith
Attended Pre-school	-0.02	0.79
Place for Study	1.69	0.59
Help in Homework	-0.78	-0.32
Availability of Textbooks	0.65	0.11
Availability of Study Material	-0.63	-0.68*
Helping Household	0.59	-0.09
Regularity in Attendance	1.47*	0.27
R	0.18	0.12

* $p < 0.05$, ** $p < 0.01$

Considering both the criteria together, the significant variables were found to be a place for study at home, availability of study material and attending school regularly. The set of variables represented the family's involvement with and support for achievement in school.

Educational Environment at Home

	RC	Arith
Get Newspaper	-0.79	-0.66
Get Magazines	1.01	0.66
Books at Home	1.36*	0.49
Reads Books	2.96	0.81
R	0.29	0.13

* $p < 0.05$, ** $p < 0.01$

The family receiving a newspaper and magazines seemed to have no relationship (direct or indirect) with achievement of the children at school; availability of books at home had some. This probably indicated an educated family and one that was interested in knowledge. Reading of books other than the textbooks by the child turned out to be the most important variable in this group.

The three composite variables derived and five others were regressed with achievement in reading comprehension and arithmetic separately.

Table 20.12(a)

CONTRIBUTION OF PUPIL-RELATED VARIABLES
TO ACHIEVEMENT IN READING COMPREHENSION

Variable	R	R ²	Increment in R ²	F	r
Home Background	3399	1155	1155	137.43*	.34
Word Knowledge ¹⁹	4376	1915	0759	98.71	.34
Eduatl Environ	4512	2036	0121	15.94	.29
Age	4574	2092	0056	7.48	-.15
Facilities for Learning	4607	2122	0030	4.01*	.19
Time Watch TV	4626	2140	0017	2.33	.23
Similar Language	4646	2158	0019	2.49	.04
Gender	4650	2162	0003	0.53	-.02

* $p < .05$, ** $p < .01$

Table 20.12 (b)

CONTRIBUTION OF PUPIL-RELATED VARIABLES
TO ACHIEVEMENT IN ARITHMETIC

Variable	R	R ²	Increment in R ²	F	r
Word Knowledge	3079	0948	0948	110.18*	.31
Eduatl Environ	3179	.1011	0062	7.31**	.13
Gender	3234	1046	0035	4.16*	-.09
Similar Language	3255	1060	0013	1.59	-.03
Home Background	3284	1079	.0019	2.24	.12
Time Watch TV	3290	1082	0003	0.41	.06
Age	3290	1083	0001	0.06	-.00
Facilities for learning	3291	1083	0000	0.03	.05

* $p < .05$, ** $p < .01$

Compared to other States, fewer variables in Tripura contributed to R² statistically significantly. Only Word

Knowledge and 'Educational Environment at Home' had a significant increment in R² for both the criterion variables. For arithmetic, in addition to these two variables, gender alone made a significant contribution in favour of boys. 'Home Background', 'Age', and 'Facilities for Education' all added to R with Reading Comprehension, while watching TV, or studying in a language other than the one spoken at home and being a boy or a girl did not make any difference to achievement.

Gender had negative correlations with both the criteria, favouring boys. Age had a strong negative correlation with Reading Comprehension but a near nil relationship with Arithmetic.

As in most States, the R² was smaller in Arithmetic. It was only half of that obtained for Reading Comprehension.

The relationship of home background variables with the achievement of pupils was studied in Tables 20.12 (a) and 20.12 (b). In Tripura, fewer variables made significant contribution to R² in relation to Arithmetic than with Reading Comprehension. The difference was expected as learning of arithmetic was considered more specific to tasks carried out in schools, while language is continuously learnt both at school and outside it. The total variance explained in either of these two tables, i.e., 22% and 11%, was lower than the corresponding median values of 27% and 18% for all the States.

The differences in pupil achievement could be attributable to the impact and interplay of several variables. Family background and individual ability of the pupils was one part of it, opportunities made available by the school would also affect pupil learning. The schools would, especially, play a more powerful role where the economic and educational status of the families was low.

In Tripura, the range of scores of pupils tended to be lower. The standard deviation for most of the tests was higher only than that obtained in Nagaland.²⁰ The tests also proved very difficult for Tripura, the average total was higher only to that of Karnataka. It would also affect the range of the scores. The school averages were less varied than in any other State. For example, the standard deviation of 80 school means in the test in arithmetic was 3.4 as compared to 5.0 of the distribution of scores of more than one thousand pupils. Both the values were much smaller than the respective country medians of 6.4 and 7.9. The lower spread of school means was as expected.

All the school-related variables, excluding those pertaining to education and the experience of the teacher

19 The scores in World Knowledge were used as a surrogate for a measure of Intelligence.

20 The scores obtained by pupils from Sikkim in Arithmetic were not considered.

or the practices they adopted in teaching, were regressed with pupil achievement in the two criterion variables. In this analysis, the mean achievement of pupils from a school who responded to the tests was used in place of the score achieved by the individual pupil.

Table 20.13(a)

CONTRIBUTION OF SCHOOL-RELATED VARIABLES
TO ACHIEVEMENT IN READING COMPREHENSION

Variable	R	R ²	Increment in R ²	t	p
Location	3477	1209	1209	10.73	<.35
Teachers per Class	1240	1798	0589	5.53	.29
Group Working Days	4692	2202	0404	3.93	<.18
Age of the Headmaster	5014	2514	.0313	3.13	.24
Proportion SC/ST	5423	2912	.0427	4.48*	<.01
Books in the Library	5786	3348	0406	4.45	.22
PEA	5933	3520	0172	1.91	<.21
Facilities for Teachers	6078	3694	0174	1.96	.24

* $p < .05$, ** $p < .01$

Table 20.13(b)

CONTRIBUTION OF SCHOOL-RELATED VARIABLES
TO ACHIEVEMENT IN ARITHMETIC

Variable	R	R ²	Increment in R ²	t	p
Incentive Schemes	2301	0529	.0529	4.36*	<.23
Working Days	3228	1012	0513	4.41	<.18
Book Bank	3903	1523	0481	4.31*	.18
Proportion SC/ST	4297	1846	0323	2.97	.16
Teachers per Class Group	4801	2305	0459	4.41	.17
Professional Training of Headmaster	5081	2581	0276	2.72	.13
Pre-Primary Classes	5322	2932	0251	2.52	<.00
Room for the Headmaster	5695	3243	0411	4.32	.15
Years of Existence	5940	3528	0285	3.09	<.20
No Detention Policy	6068	3682	0154	1.68	.06

* $p < .05$, ** $p < .01$

Although all the thirty-one independent variables on which information was available on the school questionnaire were entered in the regression-analysis, only those and a few more down the line which contributed a statistically significant increment to R^2 are listed in the

tables given above. The total contribution to R^2 was 51% for Reading Comprehension and 48% for Arithmetic.²¹ Both the values were much higher than the respective country medians of 26% and 30%.

The school-related variables appeared to influence pupil achievement a great deal more than home-related variables. This was along the expected lines. In societies, where the educational and economic levels of the families were neither very high nor varied, the schools were expected to contribute more to learning. It was also hypothesised that R^2 would be larger for Reading Comprehension than for Arithmetic in relation to home background variables but its value would be higher for Arithmetic so far as the impact of school variables was concerned. It turned out to be so in Tripura to some extent. It may be recalled that in Table 20.12 (b) R^2 was only half as large as in Table 20.12 (a). While in Table 20.13(b) the value of R^2 for Arithmetic remained lower, the difference was a small 3% only.

The two variables that made a consistently significant contribution to R^2 in relation to both the criteria were (i) availability of 'Teachers per Class Group', (ii) number of 'Working days'. Average number of teachers available per class group in Tripura was more than what would be considered very comfortable in this country. There must be large differences among the schools on this variable. Both 't's were positive.

But the number of working days was not easy to interpret unless affected by local events. It was expected to remain nearly constant within the State. It obviously was not. The more difficult to comprehend was the negative sign of both 't's (each equal to -18). Why should the schools that worked for more days have lower means? Could it be that in the schools which had to remain closed for some reason the teachers put in greater effort (and enthusiasm) to make up for the missed time, and the accompanying spirit had a positive impact on pupil learning?

Another variable that made a significant contribution to R^2 with respect to Reading Comprehension and a sizeable one for Arithmetic was the proportion of SC/ST in the schools. The differences in the average achievements of pupils when divided along the caste lines are seen on the test of Reading Comprehension (paragraphs) in Table 20.11.

The schools that were located in the urban area and those that had more books in the library tended to get a higher average in Reading Comprehension. The average number of books in the school library in Tripura was higher only to that reported by schools in Meghalaya. But in spite of the low average of 42 books,

²¹ The total R^2 cannot be seen in the truncated tables.

the schools could differ from each other. Both the variables point toward facilities available for reading more books.²²

In addition to the three variables that made a consistently significant contribution to R^2 for both the criteria, 'Incentive Scheme' and Book Banks also made some difference to pupil achievement in arithmetic in various schools. The former had a negative relationship. Implementation of Incentive Schemes could make demand on the time of the teachers, it is particularly so in some

States in the case of supply of midday meals, for example. Arranging this, particularly meals that were cooked, probably took away a part of the teaching time. More pupils who were not interested in learning might be joining school for the benefits that go with these schemes. The negative β indicates the direction. The existence of a Book Bank had a positive influence²³ on learning arithmetic.

In Tripura, the schools seemed to affect pupil learning to a much larger extent than the homes.

²² One-third of the children in the sample reported reading books other than their textbooks.

²³ Twenty-four per cent children said they did not have all or most of the textbooks.

Table 20-A

INTER CORRELATIONS OF PUPIL-RELATED VARIABLES AND ACHIEVEMENT

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	
1	100	20	-04	.08	-15	-26	-11	-37	-42	28	-16	-14	-15	-24	-24	-28	-17	-04	-26	-34	-41	00	-24	-09	-06	-27	-22	-19	-22	-63	-27	-35
2		100	-12	.06	-13	-10	-11	-23	-28	20	-05	-22	-15	-13	-28	-18	-13	-10	-12	-16	-18	-00	-18	-01	01	-19	-11	-09	-15	-28	-16	-16
3			100	-04	.12	11	02	08	13	03	03	07	08	.05	07	07	04	-01	07	00	06	-09	-03	-01	-12	02	-04	-02	08	07	03	
4				100	-06	-13	-04	-24	-20	04	-18	-14	-04	-13	-12	-07	-14	-15	-15	-11	-12	01	-13	-02	-05	-07	-10	-09	-12	-35	-11	-15
5				100	.32	04	28	.21	-12	02	18	13	17	04	.11	15	06	15	11	19	-02	04	.05	00	10	07	12	05	16	03	14	
6					100	.23	19	25	-08	.06	.21	26	30	15	21	10	-01	12	10	.18	-03	07	-05	.01	11	18	11	.04	.24	13	11	
7						100	08	14	-04	13	16	.18	21	14	15	11	.10	17	.15	11	.07	03	01	04	.12	07	05	03	11	12	17	
8							100	55	-30	-17	26	21	28	21	20	34	21	41	.42	39	13	30	.17	22	32	24	24	.31	85	17	45	
9								100	-32	.19	24	21	27	27	24	29	19	40	41	36	12	28	12	13	31	25	22	27	76	24	45	
10									100	-09	-06	-12	-11	-18	-13	-14	-02	-16	-22	-18	-08	-15	-11	-06	-19	-14	-16	-16	-45	-17	-21	
11								100	20	.12	.18	13	.18	.27	.15	26	27	22	04	12	04	.06	15	09	06	11	22	57	28			
12									100	33	38	29	.27	25	.10	28	24	22	-04	04	-07	-06	10	04	.06	01	24	.03	26			
13										100	52	44	38	16	04	15	18	.16	-02	12	-03	03	15	05	08	08	22	44	17			
14											100	42	40	25	12	30	24	20	-06	09	-11	-02	14	08	09	04	31	20	28			
15												100	.42	20	13	18	.21	17	-02	17	-09	-03	19	08	11	10	29	53	22			
16													100	17	06	19	25	23	01	16	01	01	19	.13	09	14	27	72	25			
17														100	40	38	36	31	02	11	01	04	19	13	13	09	33	19	31			
18															100	.23	26	19	06	12	02	06	11	08	10	11	.19	.10	37			
19																100	53	39	10	24	08	13	21	14	19	22	42	.17	76			
20																	100	39	11	28	12	15	28	18	20	27	47	25	92			
21																		100	06	24	09	13	24	16	17	23	43	22	42			
22																			100	43	27	31	.32	26	27	46	12	05	13			
23																				100	.33	32	40	37	33	94	34	20	30			
24																					100	20	.22	.20	17	63	17	.05	.13			
25																						100	25	26	32	34	19	06	16			
26																							100	.41	38	41	37	23	28			
27																									100	42	38	28	13	18		
2																										100	33	26	10	22		
29																											100	34	19	29		
30																												10	34	54		
31																													100	29		
32																														100		

Table 20-B

INTER CORRELATIONS OF SCHOOL-RELATED VARIABLES AND ACHIEVEMENT

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	
100	45	65	23	-05	-09	-	08	23	17	-09	18	-06	-30	-37	12	12	-02	03	20	-18	-08	-21	18	-06	28	10	12	-26	-00	-	-13	18	19	06	14	14	03	21	
100	59	29	-15	-02	-	-	00	15	08	05	23	-26	-16	-44	10	06	-06	09	22	01	-07	00	04	18	08	05	-04	-06	-02	-	-05	22	20	11	16	13	12	24	
100	28	-12	-24	-	-	-	10	13	20	-07	25	-15	-14	-45	23	22	07	09	34	02	-00	-13	24	01	16	24	20	-17	-06	-	03	17	37	19	25	12	22	26	
100	25	17	-	-	-	-	03	15	-11	-21	17	-28	19	-19	00	06	03	13	21	12	08	20	04	30	15	08	09	-18	-24	-	14	08	11	13	29	10	17	10	
100	24	-	-	-	-	-	04	12	-07	-06	-26	30	15	48	-14	-12	-01	-25	-16	-12	-04	10	34	-46	-13	-10	-09	12	29	-	00	-39	-13	-11	-40	-34	-35	-35	
100	6	-	-	-	-	-	-05	18	-36	-05	12	-20	05	18	-20	-14	-05	18	02	26	06	17	-27	40	-10	-02	-01	14	10	-	00	-06	-08	-03	-04	27	09	-08	
100	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
100	8	-	-	-	-	-	100	07	-10	-11	31	-04	04	09	16	03	32	15	14	-03	36	05	02	-04	10	-03	03	-04	-13	-	-00	-02	-03	-06	02	-04	02	-03	
100	9	-	-	-	-	-	100	-19	-12	01	-02	06	-11	-08	-23	-03	07	00	-16	-29	12	03	-20	-	21	15	04	08	-	-02	00	-08	-05	05	08	-05	-02		
100	10	-	-	-	-	-	100	07	16	06	-11	-22	07	11	-02	-09	01	-12	05	-01	05	-29	31	01	15	05	-07	-10	-04	-	-20	05	-02	-22	-08	-12	-13	03	
100	11	-	-	-	-	-	100	-11	09	-21	-00	01	-10	-12	-05	-01	05	-07	-18	08	-10	-08	-04	11	05	-	-	05	-	-18	-10	-29	-08	-19	-17	-06	-18		
100	12	-	-	-	-	-	100	-37	-27	-09	23	20	29	01	14	31	17	-13	13	29	30	-06	-11	-06	-16	-	-	06	02	12	-	16	-02	01	02	-18	-17	-09	-01
100	13	-	-	-	-	-	100	-10	28	-20	-19	-06	-15	-21	-20	12	02	08	-22	05	-01	06	02	12	-	-	06	02	12	-	10	-17	01	14	-00	-00	-05	-13	
100	14	-	-	-	-	-	100	16	-05	-05	-12	10	-05	-08	-13	18	-06	-08	-24	00	-04	-04	01	-	-	06	02	12	-	10	-26	-17	-03	-34	-20	-18	-27		
100	15	-	-	-	-	-	100	-07	-11	11	-19	-25	08	11	15	-02	-03	-14	-17	-09	10	12	-	-	06	02	12	-	10	-26	-17	-03	-34	-20	-18	-27			
100	16	-	-	-	-	-	100	74	07	02	-02	05	-04	-17	-02	-01	15	07	07	-16	05	-	-	06	02	12	-	10	-26	-17	-03	-34	-20	-18	-27				
100	17	-	-	-	-	-	100	-17	-04	-06	14	-03	-27	-00	07	18	06	06	-12	04	-	-	06	02	12	-	10	-26	-17	-03	-34	-20	-18	-27					
100	18	-	-	-	-	-	100	20	03	09	17	-20	18	-06	06	11	12	-06	-08	-	-	06	02	12	-	10	-26	-17	-03	-34	-20	-18	-27						
100	19	-	-	-	-	-	100	49	15	15	08	06	11	01	06	02	-11	01	-	-	06	02	12	-	10	-26	-17	-03	-34	-20	-18	-27							
100	20	-	-	-	-	-	100	37	10	-10	10	10	-09	-00	01	-12	-01	-	-	06	02	12	-	10	-26	-17	-03	-34	-20	-18	-27								
100	21	-	-	-	-	-	100	26	-12	-03	30	17	-11	-09	14	-07	-	-	06	02	12	-	10	-26	-17	-03	-34	-20	-18	-27									
100	22	-	-	-	-	-	100	05	09	28	-01	03	09	-11	-01	-	-	06	02	12	-	10	-26	-17	-03	-34	-20	-18	-27										
100	23	-	-	-	-	-	100	00	03	-17	07	13	00	15	-	-	06	02	12	-	10	-26	-17	-03	-34	-20	-18	-27											
100	24	-	-	-	-	-	100	-27	18	07	04	-32	07	-	-	06	02	12	-	10	-26	-17	-03	-34	-20	-18	-27												
100	25	-	-	-	-	-	100	13	11	08	-07	-10	-	-	06	02	12	-	10	-26	-17	-03	-34	-20	-18	-27													
100	26	-	-	-	-	-	100	-07	-08	-10	-01	-	-	06	02	12	-	10	-26	-17	-03	-34	-20	-18	-27														
100	27	-	-	-	-	-	100	92	-11	-18	-	-	06	02	12	-	10	-26	-17	-03	-34	-20	-18	-27															
100	28	-	-	-	-	-	100	-17	-13	-	-	06	02	12	-	10	-26	-17	-03	-34	-20	-18	-27																
100	29	-	-	-	-	-	100	01	-	-	06	02	12	-	10	-26	-17	-03	-34	-20	-18	-27																	
100	30	-	-	-	-	-	100	-	-	-	06	02	12	-	10	-26	-17	-03	-34	-20	-18	-27																	
100	31	-	-	-	-	-	100	48	39	29	39	32	29	51	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
100	32	-	-	-	-	-	100	49	48	60	47	48	91	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
100	33	-	-	-	-	-	100	42	37	24	23	72	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
100	34	-	-	-	-	-	100	38	47	66	52	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
100	35	-	-	-	-	-	100	61	54	60	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
100	36	-	-	-	-	-	100	69	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
100	37	-	-	-	-	-	100	46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
100	38	-	-	-	-	-	100	46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
100	39	-	-	-	-	-	100	46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		

Uttar Pradesh

The largest State in the country, namely, Uttar Pradesh was to test more than 10,000 pupils from 415 schools. For some reasons the work related to the survey lagged behind the schedule and the State did a hurried job. It was important to test children towards the end of the academic year. In case of delay due to any unusual circumstance, the States were requested to test the children immediately after they took the year-end examination of Class IV. Uttar Pradesh had to follow the latter practice.

For the purpose of sampling, the State was divided in nine regions, including the capital city. The number of pupils in each region, out of the allocated sample of ten thousand, was decided on the basis of the enrolments in Class IV; the number of schools were selected according to the average enrolment, separately for urban and rural areas. The State returned data for 4,833 pupils¹ from a total of 400 schools, it worked out to 48% pupils from 96.5% schools, pointing out a big gap between enrolment and attendance. As the data were collected when the new classes had just begun, absenteeism could be higher than would be during the last two months of the academic year.

The maximum drop-out was from the Kumaun area, followed by Meerut, where only 32% and 34% of the sample was reached, respectively. The maximum proportion of the sample -- 74% -- was from the capital city of Lucknow, followed by the districts of Allahabad (65%) and Gorakhpur (60%). The composition of the sample obtained was thus very different from the one planned. The lowest achievements were seen in Lucknow (region) and Kumaun, which, considering their lower representation in the sample, would tend to increase the State average.

The representativeness of the sample was also judged by comparing some of the statistics obtained from the sample with those obtained in the Fifth All India Educational Survey conducted by the NCERT with September 1986 as the reference point.

Table 21.1

SAMPLES PLANNED AND ENTERED IN ANALYSES¹

Regions	No. of Schools		No. of Pupils	
Capital City	18 ²	25 ³	450 ²	331 ³
Meerut	60	51	1460	502
Agra	43	48	1043	468
Bareilly and Moradab	51	59	1313	611
Allahabad	40	48	966	629
Lucknow	61	30	1481	544
Gorakhpur	80	76	1926	1149
Kumaun and Paudi Garhwal	36	32	866	278
Jhansi	26	31	631	321
Total	415	400	10136	4833

Table 21.2

SAMPLE AS COMPARED TO THE POPULATION

Variable	Percentage	
	1986 Survey	Sample in the Study
Primary (only) Schools	98.5	93.2 ¹
Girl Students	34.2	31.4 ⁵
Scheduled Caste Students	20.1	22.0 ⁴
Scheduled Tribe Students	0.3	2.8 ³
Women Teachers	21.8	24.1 ⁶
Trained Teachers	94.9	90.8 ⁴

Statistics on all the variables differed from the Survey figures to a small extent — some of these in the expected direction, but not all. The increment in percentage of SC and ST pupils and women teachers were considered in the expected direction as these corresponded to the goals set by the society, as expressed in

¹ In addition, eight hundred seventy-four pupils from Class V were also administered the tests.

² The number planned.

³ The number entered in analyses.

Source

⁴ The School Questionnaire

⁵ The Pupil Questionnaire.

⁶ The Teacher Questionnaire

the policies of various governments. But the difference in the percentage of girls was in the opposite direction. The likely source of deviation could be the difference between enrolment and the differential percentages of attendance of the various groups. This could have reduced the percentage of girls who responded to the tests.

The proportion of primary (only) schools of all primary sections which was 98.5% in 1986 got reduced to 93.2%; some schools could have been upgraded. There was another source of bias reflected in the obtained 73.3% rural group against 81.5% of all primary school children enrolled being from rural areas in 1986. A larger percentage of urban children in the sample could have resulted either due to a sharp increase in the population in the area or to the difference in the percentage attending school in rural and urban areas. The advantages and disadvantages of these deviations for the target group were in both directions. Girls achieved somewhat higher than boys, their smaller representation was partly upset by the higher proportions of SC/ST groups who achieved considerably lower than the 'Others'.

The reasons for reduction by 4% of the trained teachers were not understood.⁷

The Tests in Uttar Pradesh

As the tests were developed in Hindi, translations were not needed. The State participated only nominally in the try-out due to delay in starting the work.

Table 21.3

DIFFICULTY VALUES OF THE ITEMS

Pass Percentage	Arith	RC(P)	RC(S)	W K	A W	S.S	Spell
10 - 19	1	1					
20 - 29	3	2			2		4
30 - 39	8	3			3		2
40 - 49	13	12	5	14	6		13
50 - 59	10	21	8	19	10	6	4
60 - 69	5	5	3	6	3	11	2
70 - 79				1		1	
Median	45.7	51.4	53.2	52.7	50.5	62.2	44.5

In general, the tests were somewhat easy for the State. The median values of pass percentages on only two of the tests were less than 50%. Both of these were based on learning more specific to school teaching. Fifty-six per cent of all items had pass percentages above 49.5, the test on Sentence Structure proved particularly easy. With the exception of two items in the total bat-

tery, the pass percentages remained restricted to the upper limit of 69.5%.

The Discrimination Indices were very high, the median values for the items in each test varying between 68.5 to 89.5. This was also indicated by the concentration of items around 50% pass.

The Groups in the Study

The Pupils

The following remarks are based on the responses of 4,831⁸ pupils of Class IV in the State. Seventy-three per cent of the pupils belonged to rural areas, 31% were girls. Caste-wise, the group was distributed over SC — 22%, BC — 37%, and Others — 38%, the ST were a nominal 3% only. The average age of 9.4 years of the pupils was one of the lowest in all the States.

Forty-three per cent of the fathers and 54% mothers of this group were illiterate. Another 22% fathers and 20% mothers had studied only up to the primary level. On the other side, 6% fathers and 4% mothers had studied up to the college/university level. Fifty-five per cent of fathers were farmers, 15% were either unskilled workers or were unemployed⁹. Seven per cent fathers were working as professionals or held high-level jobs. Forty-six per cent pupils came from families with four or more children, only 14% had one or no sibling.

Seventeen per cent of these children had attended some kind of pre-school programme. Eighty-three per cent spoke Hindi at home, i.e., the language of instruction at school; the remaining 17% used some other language.

Seventy per cent children reported attending school regularly; 3.5% had to miss it frequently. Sixty-three per cent children said they had most of the textbooks, in contrast, 70% reported availability of adequate (other) study material such as notebooks, etc. In nearly all other States the picture had been the reverse, namely, more pupils reporting availability of textbooks than other material. A likely source of difference may be in the type of the other material. If slates and wooden boards were used more in Uttar Pradesh and paper pencils or pens in some other State, this kind of situation could easily arise. In the neighbouring State of Bihar, the situation was somewhat similar, with 34% and 36% reporting availability of most textbooks and other study material, respectively.

Half the children received help in doing their homework from the family, and 43% said they had some place

7 The State Coordinator said this could be due to the appointment of teachers to teach Urdu, who generally are untrained. A small percentage of 'untrained' teachers get recruited as dependents of persons who lose their lives while in service.

8 From the original number of 4833, the data of 2 pupils had to be dropped.

9 It could include a small percentage of occupations which were not classified in the categories provided.

⁹ in their homes where they could sit and study. Thirty-nine per cent of these children worked for two or more hours every day to help their families with domestic or occupation-related work.

A newspaper was received in 21% of the families and magazines in 19%. There were no books other than textbooks in 72% of the homes and 69% children said they read nothing other than their textbooks. Seventy-two per cent children did not watch any television.

It was a mixed picture on the background variables. Homes were poorly equipped in terms of providing stimulation. Most children had not attended any pre-school but they could attend school reasonably regularly, textbooks and other study material were also available.

The Teachers

Of the 622 teachers who responded to the questionnaire, 73% were serving in schools situated in rural areas; only 21% were women. Although 26% teachers were in the age-group 35 or less, 60% reported five years or less of teaching experience. Eight per cent teachers were more than 50 years in age but less than 1% said they had taught for more than 20 years.¹⁰

Thirty-nine per cent of all teachers in primary schools in the State were graduates, 35% had studied up to the senior secondary level; 22% were matriculates, 3% had not passed Class X. Sixty-two per cent of them had not received any in-service education.¹¹

In comparison to the 73% working in rural areas, only 42% teachers reported living very close to their schools as reflected by the time needed by them to travel to and from their place of work. Another 32% lived sufficiently near their schools to require an hour or less for travelling (both ways), the remaining 26% had to spend more time.

Only 11% teachers reported adopting innovative practices in teaching but a majority of 92% believed such initiative would help get pupils more interested in their studies and also improve their achievement. Nine per cent teachers rarely used anything other than the textbooks to teach; 16% had never developed any teaching material but, on the other hand, 74% reported involving even their pupils in this activity. Most (62%) teachers evaluated their pupils 2-3 times a year; 32% undertook this exercise every month; and a small 6% did it only once a year but 34% teachers could think of only one use of evaluation -- promotion. Only 21% said they used it for diagnosing weaknesses, both in teaching and learning. Most of the teachers said they helped the weaker

students by paying them special attention, only 3.5% asked parents to arrange tuition. Homework was checked regularly by 93%, and occasionally by 6%.

Forty-six per cent teachers had their own copies of the textbooks and 43% borrowed them from the students -- probably on the spot, the rest of the 11% had copies of books from the library. Forty-six per cent had no access to the language dictionary.

With more than one-third graduates, the teachers in Uttar Pradesh were well prepared academically, only 9% of them were untrained, several of them had to spend quite some time to reach their schools. They remained conservative in the practices they followed. Quite a large number did not have the basic material such as textbooks or access to a dictionary.

The Headmasters

Of the 381 headmasters,¹² 7% were untrained, 6.5% had a B Ed degree, and the rest either one or two years of professional education meant for preparing teachers for primary schools. Only 9% of the headmasters were young being less than 35 years of age, on the other side, 37% were older than 50 years. Correspondingly, 75% had been teaching for more than 15 years but 9% had taught for less than five years; 35% had been headmasters for less than five years.

The Schools

Eighty per cent of the schools in the sample were in rural areas. Ninety-two per cent of all schools were managed by the government; out of the rest, 4% were aided and 4.5% totally private. Ninety-three per cent schools had primary sections only, 6% were middle schools; the rest 1% were part of secondary or intermediate colleges. A comparable 93% admitted both boys and girls and 2.4% were for girls only. Two-thirds of these schools had been in existence for more than 20 years but 9% were recently started, i.e., in the last six years. Thirty per cent of the schools had pre-primary sections as well -- a rather high percentage.

Facilities-wise, 35% had a room for the headmaster; considering that only 7% of the schools in the sample were either middle or secondary schools, it can be said that several primary schools could afford a room for the headmaster. Fifteen per cent also reported a room for the teachers. Drinking-water was available in two-thirds of the schools but urinals for girls existed in only one out of every five schools. Nine per cent schools had Book Banks, and the average number of books in the

¹⁰ This indicates a much older age-group entering the service.

¹¹ The State Coordinator confirmed the absence of regular programmes of in-service education of teachers.

¹² School Questionnaires were available from only 381 out of the 400 schools where tests were administered.

library was approximately 130 only. Nine per cent of all teachers were untrained.

There was no indication of a clear-cut policy about 'No Detention' in the early Classes in the State. The responses regarding its implementation were distributed over all the Classes, with 15% saying it did not exist and 14% omitting to answer the question. The highest response of 28% confirmed following it in Class I only, with another 21% headmasters saying they did not detain pupils up to Class IV¹³.

Forty-two per cent schools had not been covered as yet by Operation Blackboard. Fifty-two per cent headmasters said they had a Parent Teacher Association, the number of meetings held during the year varied from one to four or more a year.

Most of the schools were managed by the government, a fairly large percentage had pre-primary classes. Going by the common standard of 2-3 roomed school buildings, not all schools in Uttar Pradesh were short of space as was indicated by the availability of a room for the headmaster. There was no clarity regarding 'No Detention Policy'.

Achievements of Pupils

Data available from 4,831 pupils was analysed. Their achievements on various tests are given below.

Table 21.4

ACHIEVEMENTS OF PUPILS

<i>Test</i>	<i>Arith</i> (40) ¹⁴	<i>RC(P)</i> (44)	<i>RC(S)</i> (16)	<i>W.K.</i> (40)	<i>A.W.</i> (24)	<i>S.S.</i> (18)	<i>Spell.</i> (25)	<i>Total</i> (207)
Mean	18.3	22.0	8.6	21.3	11.9	11.1	11.3	104.5
SD	10.1	11.9	5.6	11.4	6.3	5.3	7.5	
Mean as Percentage	45.7	50.0	53.1	53.2	49.6	61.7	45.2	50.4
KR-20	0.93	0.95	0.94	0.95	0.89	0.90	0.93	
All India Median as Percentage	41.2	45.4	43.1	49.5	41.7	57.8 ¹⁵	42.8 ¹⁵	45.2

On the whole, the achievements in Uttar Pradesh were satisfactory. With the exception of two tests, the mean scores on all others were 50% or more. The two low scores were on tasks restricted by and large to learning in school, i.e., arithmetic and spelling. The highest score was observed for 'Sentence Structure' which could be influenced by the type of speech pattern prevalent in

the society, in general. Although 17% of the children reported the language spoken at home to be different, a substantial part of this 17% could be from the families speaking, Urdu which is very similar to Hindi so far as grammar is concerned.

The States were requested to test a small sample of pupils from Class V using the same test battery. The recommended number of pupils was 200, to be selected from a few schools (at least 10) identified as representative of the total sample on the basis of judgement only. The State administered the battery to a large group of 874 pupils of Class V.

Table 21.5

MEAN ACHIEVEMENTS OF PUPILS — CLASSES IV AND V

<i>Class</i>	<i>Arith</i>	<i>RC(P)</i>	<i>RC(S)</i>	<i>W.K.</i>	<i>A.W.</i>	<i>S.S.</i>	<i>Spell</i>	<i>Total</i>
IV (4833)	18.3	22.0	8.6	21.3	11.9	11.1	11.3	104.5
V (874)	15.8	19.5	6.6	18.1	10.3	9.8	9.1	89.2

The students of Class V scored lower than those of Class IV in each of the seven tests, adding to a large difference of 15 points in the aggregate. While 'recency' could affect the scores in arithmetic, the reason cannot hold good for tests in language. It is likely that every-one pupils, teachers and the investigators — were conscious of the Class IV group being the one under scrutiny, and worked for harder effort by and better achievement of this group. It was, nevertheless, a dismal picture.

For the purpose of sampling, the State was divided into the existing educational regions. One district (two in the case of very big regions) was selected from each region for the purpose of selecting a sample of schools. This approach was adopted with the dual objectives of ensuring a representative sample of the schools (and pupils) in the State and to be able to compare the achievements of children of different regions.

The achievements were the lowest in the Lucknow region, the tests were administered in the district of Hardoi. The number of schools contacted in this region was also the lowest with respect to the numbers planned. The capital city of Lucknow, and the Bareilly/Moradabad and Jhansi regions had near equal means, all substantially higher than the State average of 104.4. On the other side, Garhwal, along with Deoria, pulled it down. The Agra region was only marginally lower than the State average, the sample in this region was taken from Etah.

13 The State Coordinator informed that the State has directed that no pupils be detained up to Class II, some teachers (in this case headmasters) may not be aware of it.

14 The maximum possible score.

15 The tests were different in the States. Tripura is excluded.

Table 21.6

ACHIEVEMENT OF PUPILS — REGION-WISE

Region		Arith	RC(P)	RC(S)	WK	AW	SS	Spell	Total
Capital City (331)	Mean	18.4	23.6	9.4	22.2	13.7	12.9	13.1	113.3
	SD	9.9	12.7	5.7	11.0	6.7	5.1	7.8	
Meerut (502)	Mean	19.7	21.0	9.7	21.0	13.1	13.0	11.6	109.1
	SD	8.7	11.0	5.3	10.3	5.8	4.0	6.3	
Agra (468)	Mean	16.5	23.0	8.1	21.9	12.2	11.0	10.9	103.6
	SD	9.6	12.5	6.0	11.9	6.6	5.5	7.7	
Bareilly and Moradabad	Mean	20.1	23.5	8.8	23.7	13.4	11.7	12.8	114.0
	SD	10.2	11.7	5.6	2.0	6.5	5.2	7.3	
Allahabad (629)	Mean	18.4	24.1	10.4	20.4	12.5	10.9	11.3	108.0
	SD	10.6	11.5	4.6	10.7	5.9	5.3	7.3	
Lucknow	Mean	12.6	14.9	6.5	16.7	9.0	7.9	8.2	75.8
	SD	7.3	10.3	4.7	9.9	5.8	5.2	7.2	
Gorakhpur	Mean	20.8	23.0	7.7	21.6	11.2	11.6	11.4	107.3
	SD	10.8	11.9	6.2	11.8	6.1	5.3	7.7	
Kumaun and Pauri-Garhwal	Mean	15.7	19.9	7.5	18.9	10.9	9.5	10.8	93.2
	SD	7.5	10.1	5.0	11.8	6.1	5.2	7.1	
Jhansi	Mean	17.4	24.1	10.2	26.2	12.4	10.8	11.1	112.2
	SD	9.1	11.5	5.1	10.7	6.5	5.3	8.1	

For two of the tests, namely Arithmetic and Reading Comprehension (para), achievements of the pupils were also studied objective-wise and in case of Arithmetic also topic-wise. The details are given below.

Table 21.7

ACHIEVEMENTS IN ARITHMETIC — OBJECTIVE-WISE

Objective	Mean	SD	Mean as Percentage
Knowledge (19)	8.6	4.7	45.3
Understanding (12)	5.7	3.3	47.5
Application (9)	3.9	2.7	43.3
Total (40)	18.3	10.1	45.7

Keeping the overall mean achievement in mind the average score on application items was only marginally lower, presenting a very satisfactory picture. A somewhat higher score on items categorised as testing 'Under-

standing' in comparison to 'Knowledge' had been seen in some other States as well.

Table 21.8

ACHIEVEMENT IN ARITHMETIC — TOPIC-WISE

Topic	Mean	SD	Mean as Percentage
Time (3)	1.7	1.1	56.7
Factors and Multiples (7)	2.9	1.9	41.4
Fundamental Operations (12)	5.4	3.1	45.0
Weights and Measures (3)	1.6	1.0	53.3
Fractions (5)	2.0	1.6	40.0
Decimals (7)	3.1	2.1	44.3
Unitary Method (3)	1.7	1.0	56.7
plus Others Total (40)	18.3	10.1	45.7

The highest percentage scores were noticed on 'Time' and 'Unitary Method plus others'. This tendency was noticed in other States also, particularly on the last topic which could be attributed to the well established and routine way of teaching it, and to the questions in the test being very similar to those given in the textbooks or practised in the classroom, the 'recency' factor was more likely to be operative for 'Time', probably for 'Weights and Measures' too. The latter was also related to the daily experiences of the children. The poorest achievement in 'Fractions', particularly in contrast to 'Decimals', also points out to the role of the 'recency' factor. If learnt well, 'recency' should not make any difference in the basic competencies in arithmetic. A low 45% in 'Fundamental Operations' was a very poor score. A question requiring addition of three numbers was correctly answered by only 54% pupils.

Table 21.9

ACHIEVEMENT IN READING COMPREHENSION OBJECTIVE-WISE

Objective	Mean	SD	Mean as Percentage
Noting Detail (17)	9.4	5.0	55.3
Simple Comprehension ¹⁷ (13)	6.8	4.0	52.3
Inference ¹⁸ (14)	5.9	3.6	42.1
Total (44)	22.0	11.9	50.0

The percentage mean scores were in the expected direction with 'Inference' having the lowest proportionate score. On the whole, the scores were considered satisfactory.

The differences in achievements of pupils were also studied when divided over area, gender and caste.

¹⁷ This includes (a) deriving the meaning of difficult words from the context, and (b) relating things at a simple level.
¹⁸ This includes identifying the message or the central idea, and the title of the write-up.

Table 21.10

DIFFERENCES IN ACHIEVEMENT — LOCATION-WISE

Test	Location	Mean	SD	t
Arith	U	17.1	10.3	4.95"
	R	18.7	9.9	
RC(P)	U	21.4	12.2	2.19
	R	22.2	11.8	
RC(S)	U	8.4	5.6	82
	R	8.6	5.6	
W.K.	U	21.4	11.5	47
	R	21.3	11.4	
A.W.	U	12.1	6.5	85
	R	11.9	6.3	
S.S.	U	11.1	5.4	51
	R	11.1	5.3	
Spelling	U	11.7	7.7	2.63
	R	11.1	7.4	
RC (total)	U	29.8	16.9	1.88
	R	30.8	16.1	
T (5 + 6 + 7)	U	34.8	16.8	1.37
	R	34.1	16.2	

Urban - 1290 Rural - 3541

* p < 0.5, ** p < 0.1

Rural children achieved higher than the urban children in two tests, the situation was reversed in favour of urban children in one of the tests. On the aggregate score, the rural group maintained its lead (104.9 as against 103.1 of urban children) though the difference was not very substantial. Seventy-three per cent of the sample from the rural areas, was not considered selective in any way.

Table 21.11

DIFFERENCES IN ACHIEVEMENT — GENDER-WISE

Test	Gender	Mean	SD	t
Arith	B	18.6	10.1	3.16'
	G	17.6	9.7	
RC(P)	B	22.1	11.9	1.08
	G	21.8	11.8	
RC(S)	B	8.6	5.6	1.33
	G	8.4	5.6	
W.K.	B	21.7	11.5	3.42
	G	20.5	11.3	
A.W.	B	12.0	6.3	1.38
	G	11.7	6.3	
S.S.	B	11.1	5.4	.54
	G	11.1	5.3	
Spelling	B	11.3	7.6	36
	G	11.2	7.4	
RC (total)	B	30.8	16.4	1.18
	G	30.2	16.1	
T (5+6+7)	B	34.4	16.5	88
	G	34.0	16.1	

Boys - 3313, Girls - 1518

** p < 0.1

The differences between boys and girls were more on traditional lines with boys doing better than the girls on tests of Arithmetic and Word Knowledge. The same were statistically significant. The mean score of girls was not higher on any of the tests. The aggregate scores of boys and girls added to 105.5 and 102.3 respectively, the difference was more than on the urban/rural divide.

Table 21.12

DIFFERENCES IN ACHIEVEMENT — CASTE-WISE

Test	Group	Mean	SD	F
Arith	SC	17.1	10.0	11.55
	ST	17.2	9.4	
	BC	19.3	10.2	
	Others	18.0	9.8	
RC(P)	SC	20.1	12.1	14.08'
	ST	21.5	10.8	
	BC	23.0	11.9	
	Others	22.2	11.7	
RC(S)	SC	7.9	5.5	7.70"
	ST	8.7	5.2	
	BC	8.9	5.7	
	Others	8.5	5.6	
W.K.	SC	20.2	11.3	10.97
	ST	17.6	11.7	
	BC	22.1	11.4	
	Others	21.4	11.4	
A.W.	SC	11.5	6.4	2.81'
	ST	11.1	6.0	
	BC	12.1	6.3	
	Others	12.1	6.3	
S.S.	SC	10.3	5.5	12.25"
	ST	10.5	4.9	
	BC	11.4	5.3	
	Others	11.3	5.3	
Spelling	SC	10.4	7.4	6.81'
	ST	10.8	7.1	
	BC	11.3	7.6	
	Others	11.7	7.4	
RC(total)	SC	28.0	16.3	13.59'
	ST	30.1	14.9	
	BC	32.0	16.3	
	Others	30.7	16.2	
T (5+6+7)	SC	32.2	16.7	8.38
	ST	32.4	15.0	
	BC	34.9	16.3	
	Others	35.1	16.3	

SC - 1061 ST - 134 BC - 1803, Others - 1833

** p < 0.1

On the caste division, the sample could be divided into two groups with Backward Classes and 'Others' getting high aggregate scores and SC/ST groups getting lower equal scores. The proportion of ST candidates was only 3% in the State but it was substantially higher than 0.25%¹⁹ of the total enrolment in Classes I-V in U.P. in 1986. Twenty-two per cent of SC group was also higher, the percentage in 1986 being only 20%. These percent-

ages were also somewhat higher than their proportions in the total population of the State

The Backward Classes had the highest mean score of 108.2, followed by 105.2 of 'Others', the SC, ST groups had aggregate scores equal to 97.5 and 97.4, respectively. The Backward Classes doing better than the 'Others' had been seen in some other States as well.

Factors Related to Pupil Achievement

All individual-related variables and those related to home background, including access to facilities which were likely to influence pupil achievement, were regressed against achievement in Reading Comprehension and Arithmetic to understand their contribution to the differences in the achievement of pupils. Before this step several variables were combined to develop three composite scores.

The regression coefficients for the variables combined in the three composite scores are given below.

Home Background

	RC	Arith
Location	1.61*	1.79*
Father's Occupation	-.32	-.22*
Caste	.72*	.29*
Father's Education	.79	.24
Mother's Education	-.19	-.12
Number of Siblings	.15	-.16
R	.11	.10

The first four variables, namely, 'Location', 'Father's Occupation', 'Caste' and 'Father's Education' contributed to differences in achievement. The regression coefficients were significant for both the criterion variables, however, the Rs were rather small. 'Location' did not seem to have much impact as a single independent variable, the mean scores of urban and rural children had a difference of 1.8 scores only, but in combination with other variables, it appeared quite significant.

Facilities for Learning

	RC	Arith
Attended Pre-school	-2.43*	-2.52*
Place for Study	2.30	2.04*
Help in Homework	.92	.81*
Availability of Textbooks	1.15*	.12
Availability of Study Material	-.34	-.36
Helping Household	-.59	-.55**
Regularity in Attendance	2.22*	1.22
R	.13	.16

** $p < .01$

Attending pre-school, having place to study and attending school regularly were the three variables which had significant regression coefficients for both the criterion variables. In addition, receiving help with homework and not spending long hours helping with family related chores made a contribution to differences in achievement in arithmetic. Availability of textbooks made difference as to achievement in language. All these variables, in a way, expressed the family's concern about the achievement of the child.

The relationship with achievement, though slightly higher than with the 'Home Background', remained low.

Educational Environment at Home

	RC	Arith
Get Newspaper	1.18	-.10
Get Magazines	-.10	-.45
Books at Home	-.89*	-.26
Reads Books	.45	.11
R	.04	.03

** $p < .01$

With the exception of one of the regression coefficients, the same were not significant although the percentage of families that received newspaper/magazines at home was not very small -- 20%. About 30% children said they read something other than their textbooks; it did not seem to affect their achievement in school. The two Rs were also very small.

These three composite variables along with five others were regressed with the two criterion variables. Tables giving their contribution to R^2 are given below.

Table 21.13(a)

CONTRIBUTION OF PUPIL - RELATED VARIABLES TO ACHIEVEMENT IN READING COMPREHENSION

Variable	R	R ²	Increment in R ²	F	r
Word Knowledge	.5245	.2751	.2751	1832.58	.52
Facilities for Learning	.5299	.2808	.0057	38.42	.13
Time Watch TV	.5324	.2835	.0027	18.09	.08
Similar Language	.5347	.2859	.0025	16.69*	.09
Home Background	.5364	.2877	.0018	11.93*	.10
Educational Environment	.5367	.2880	.0003	2.09	.03
Age	.5367	.2880	.0000	0.28	-.01
Gender	.5367	.2880	.0000	-	-.02

** $p < .01$

Table 21.13 (b)CONTRIBUTION OF PUPIL-RELATED VARIABLES
TO ACHIEVEMENT IN ARITHMETIC

Variable	R	R ²	Increment in R ²	F	r
Word Knowledge	.4977	.2477	.2477	15.89	.27
Facilities for Learning	.5055	.2556	.0079	51.03	.14
Gender	.5060	.2561	.0005	3.29	-.05
Home Background	.5065	.2566	.0005	3.50	.08
Time Watch TV	.5067	.2568	.0002	1.30	.01
Similar Language	.5068	.2569	.0001	0.51	.04
Educational Environment	.5069	.2569	.0000	-	.01
Age	.5069	.2569	.0000	-	-.02

p < .05, ** p < .01

In addition to World Knowledge which had been used as a measure of differences in general ability, two of the three composite variables comprising several aspects of the environment of the child contributed significantly to differences in the achievement of children. 'Home Background' and 'Facilities for Learning' both made some and consistent contribution to differences in achievements. In addition 'Time Watch TV' and 'Similarity of Language' had additional impact on learning of language but these did not make any independent contribution to achievement in Arithmetic. Gender, however, made some difference to achievement in Arithmetic.

The total variance explained by pupil-related variables was not very small, being 29 and 26%, respectively, for the two criteria. It followed the general pattern observed over all the States, namely, more variability explained away in language than in arithmetic, although in Uttar Pradesh the difference was small, being 3% only.

Educational environment and age made no difference for either variable, even when nearly 30% children reported both availability of some books other than textbooks and themselves reading something or the other. All these sources could get subsumed in differences in the scores on Word Knowledge which contributed to 95% of the total variance explained.

The relationship of home background variables with achievements of pupils were studied in Tables 21.13 (a) and 21.13 (b). The cumulative R² of 29% for Reading Comprehension and 26% for Arithmetic were both higher than the respective country medians of 27% and 18%. The difference for Arithmetic was particularly noticeable.

A similar exercise studying the influence of school-related variables was also undertaken, in which information available about the background and experience of the headmasters along with the policies and practices being followed in schools were regressed against achievement on the two criterion variables. Teacher-related variables were not used in this analysis.

The standard deviations of the distribution of scores in Uttar Pradesh were the largest in the country. The State is big but the sample for which data were returned was not. The number of regions was maximum and the regional averages differed a great deal, indicating a high spread out for the scores of the pupils as well as school averages. The school means differed from each other only a little less than the scores obtained by the pupils. The standard deviation of 353 school means for the test of arithmetic was 8.7 as compared to the 10.0 of the distribution of the scores achieved by more than 4800 pupils. Both the values were the highest among those obtained in the 23 States.

Table 21.14(a)CONTRIBUTION OF SCHOOL-RELATED VARIABLES
TO ACHIEVEMENT IN READING COMPREHENSION

Variable	R	R ²	Increment in R ²	F	r
Time Given (Arith.)	.1941	.0377	.0377	12.96	-.19
Pre-Primary Classes	.2187	.0479	.0102	3.52	.12
Incentive Schemes	.2405	.0579	.0100	3.50	.09
Proportion SC/ST	.2599	.0676	.0097	3.41	-.09
No Detention Policy	.2711	.0735	.0060	2.10	.10
Teaching Experience of Headmaster	.2794	.0781	.0046	1.62	.04
Special Projects	.2856	.0816	.0035	1.23	.05

** p < .01

Table 21.14(b)CONTRIBUTION OF SCHOOL-RELATED VARIABLES
TO ACHIEVEMENT IN ARITHMETIC

Variable	R	R ²	Increment in R ²	F	r
Pre-Primary Classes	.1406	.0198	.0198	6.68	.14
Proportion SC/ST	.1825	.0333	.0135	4.62	-.12
Books in the Lib	.2111	.0445	.0112	3.86	-.09
Operation Blackboard	.2330	.0543	.0097	3.37	.09
No Detention Policy	.2614	.0683	.0141	4.94	.12
Time Given (Arith.)	.2772	.0768	.0085	3.00	-.09
Incentive Schemes	.2898	.0840	.0071	2.52	.07
Teachers per Class Group	.2998	.0899	.0059	2.12	-.08

* p < .05

All the variables given in the list at the end of the report were regressed with the two criteria. In the two tables given above, only those which contributed statistically significant increment to R² and a few more down the line were retained. The total contribution to R² for Reading Comprehension was 10% and for Arithmetic it was 12%, both the values were much lower than the respective median values of 26% and 30%. When com-

pared with R^2 values obtained with respect to differences among pupils, it could be said that the differences due to school variables were much smaller compared to those related to home-related variables. Some apparent homogeneity could be noticed in the write-up under 'The Schools'. Ninety-two per cent schools were managed by the government, 93% were primary (only), the same percentage admitted both boys and girls. Two-thirds of the schools had been in existence for more than 20 years. A longer period under a common management would tend to introduce greater similarity in the physical facilities and the practices being followed in the schools. They did differ on some variables.

The differences in R^2 with respect to Reading Comprehension and Arithmetic in Tables 13 and 14 were complementary though very small. The direction of difference was along the expected line but not the quantum. It was hypothesised that achievement in arithmetic would be influenced more by what went on in the school while language would be affected both by the environment at home and by the school.

There was not a single variable which contributed a significant increment to R^2 consistently for both the criteria. The closest that came to this condition were 'Time given to Arithmetic', 'Proportion of SC/ST Students', 'No Detention Policy' and 'Existence of 'Pre-Primary Classes'.

The time given to arithmetic not only had a negative correlation with achievement in Reading Comprehension, it had a negative (but smaller) 'r' with achievement in Arithmetic as well. It is likely that the extra time devoted

to arithmetic did not improve its learning, the quality of teaching would be more important than the mechanical drill of limited number of skills.

The differences in achievement of children belonging to SC/ST group and the other two groups were noted in Table 21.12 in favour of the latter. Schools having a larger proportion of SC/ST children tended to have lower averages.

Although the State had a policy of not detaining any children up to Class II, the situation as reported by headmasters varied a great deal from detaining children in Class I to promoting them automatically up to Class IV. The schools that did not promote children automatically achieved higher, the two 'r's were 0.10 and 0.12, respectively.

It was mentioned earlier that 30% schools had pre-primary classes; considering that 92% were managed by the government, these schools could be generally better equipped. The pre-primary programme was also likely to have a desirable affect on the teaching in early grades.

In addition to the variables mentioned above, 'Number of Books in the Library' made a small but significant contribution to R^2 with respect to Arithmetic but the 'r' had a negative sign.

Though the school averages in the State varied within a large range, not many variables were identified which could be considered responsible for these differences. The involvement of a teacher, headmaster or the community itself could be some of the motivating variables that were not explored in this study.

Table 21-A
INTER CORRELATIONS OF PUPIL-RELATED VARIABLES AND ACHIEVEMENT

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
1	100	-04	-11	03	-07	-01	-26	-20	-20	02	-13	-16	-07	-10	01	-06	-27	-29	-23	-22	-29	07	03	01	-01	-01	01	-04	03	24	-04	-03
2	100	01	02	-02	-14	10	-09	-05	01	07	-00	01	02	-07	-09	07	08	00	05	-01	-02	-01	-02	-01	00	-01	00	-01	-01	-08	-04	07
3	100	-05	12	-01	03	11	10	00	03	06	-00	03	-01	00	10	09	08	06	10	-05	-02	-02	-05	-02	-01	-01	-01	-02	09	01	00	
4	100	-16	03	-06	-16	-16	06	-16	-13	-07	-08	-02	-06	-15	-15	-11	-13	-11	-04	-05	-03	-05	-04	-05	-06	-05	-42	-13	-02			
5	100	-07	02	21	19	01	08	11	02	03	03	04	08	11	09	11	13	04	07	04	05	04	08	07	07	59	08	01				
6	100	-05	04	03	00	04	05	00	09	-02	-05	-07	-08	00	04	06	11	06	09	08	04	09	-02	09	02							
7	100	10	13	-07	15	13	04	04	-01	-03	18	19	15	13	16	-08	-05	-03	-06	-04	-04	-00	-04	-03	-31	02						
8	100	45	-08	16	27	03	05	10	22	23	23	21	30	03	07	07	08	08	07	11	08	-11	15	01								
9	100	-09	17	23	07	07	07	07	07	07	07	07	07	07	07	07	07	07	07	07	07	07	07	07	07	07	07	07	07	07	07	
10	100	-08	-03	02	01	-04	00	-08	-08	-08	-04	-04	-01	01	-01	00	02	02	-01	00	01	-01	-00									
11	100	27	13	19	04	06	24	25	19	21	15	10	08	05	07	07	13	12	08	12	56	04										
12	100	22	23	11	15	20	20	14	18	18	06	05	06	03	06	08	06	06	18	41	05											
13	100	58	18	20	08	08	07	10	06	02	06	08	01	09	04	07	06	02	46	01												
14	100	17	17	11	12	11	11	09	01	03	05	-03	07	02	05	04	02	29	-01													
15	100	17	-00	-03	-06	-06	-05	-02	00	-01	-00	-03	-03	00	05	00	04															
16	100	07	03	-02	01	03	07	07	10	06	07	08	09	07	64	06																
17	100	53	31	30	26	-01	03	-00	-02	02	03	05	02	03	05	02	09	15	40													
18	100	37	33	26	-03	01	-01	-01	00	02	04	00	10	12	05																	
19	100	39	32	-03	-02	-04	-00	-02	-02	-03	03	10	08	-54																		
20	100	29	-01	02	-02	02	02	04	09	01	12	13	15																			
21	100	01	07	06	03	05	06	09	08	15	09	-04																				
22	100	65	56	50	56	57	49	67	08	14	01																					
23	100	69	50	65	62	52	97	10	12	03																						
24	100	46	59	55	50	85	08	12	01																							
25	100	55	54	51	52	08	12	-01																								
26	100	64	55	68	08	13	05																									
27	100	59	64	10	16	05																										
28	100	55	10	14	05																											
29	100	10	13	03																												
30	100	17	12																													
31	100	13																														
32	100																															

Table 21-B

INTER CORRELATIONS OF SCHOOL-RELATED VARIABLES AND ACHIEVEMENT

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
1.00	.10	.22	.13	.26	-.20	.11	-.04	.08	.07	.06	.02	.06	.01	-.37	-.11	-.10	-.06	.02	-.14	-.12	-.14	.03	.00	.05	.01	-.05	.04	.16	.10	-.07	.07	.02	.04	-.05	.02	.02	-.00	.03
1.00	.52	.39	.05	-.08	-.06	-.15	.09	.12	.01	.08	.12	.01	-.20	.09	-.12	.10	.04	-.08	-.10	-.20	-.06	-.02	-.05	-.10	-.03	-.07	.07	-.09	-.02	.02	.03	.02	-.01	.02	.06	-.08	.03	
1.00	.35	.09	-.06	-.09	-.21	.13	.24	.06	.06	.08	.00	-.20	.01	-.09	-.09	.09	-.13	-.12	-.18	.04	-.03	-.00	-.04	.03	-.03	.13	-.10	-.03	.01	.05	.02	.02	.04	.04	-.08	.04		
1.00	.02	.08	.01	-.04	.02	.13	-.03	-.06	.06	.08	-.06	.04	-.03	.01	.08	-.02	-.05	-.09	.03	-.07	.02	.01	-.11	.13	.06	-.05	-.01	.00	.01	-.03	-.00	.03	.00	-.02	-.00			
1.00	-.20	.12	-.12	.14	.09	.07	-.12	.10	-.05	-.21	-.31	.01	-.14	-.12	-.22	-.16	-.23	-.08	-.62	-.02	-.09	.24	.23	.32	.15	.01	.04	-.03	-.05	-.07	-.08	-.02	-.01	-.04				
1.00	.05	.16	-.21	-.21	-.02	-.06	.03	-.03	.37	.12	.07	.22	.13	.22	.15	.17	-.05	.06	.09	.11	-.02	-.03	-.18	-.02	.06	-.03	.01	.10	.11	.01	.04	.11	.04					
1.00	.02	.07	-.10	.02	.30	.05	-.17	-.02	.02	-.01	.05	.02	-.05	-.02	-.03	-.02	-.06	-.69	.04	.11	.06	.16	-.03	.02	-.03	-.02	-.02	-.07	-.03	-.04	-.07	-.02						
1.00	-.26	-.19	.06	.00	.01	.08	.11	.04	.01	.03	.05	.06	.10	.08	.14	-.02	.03	.09	-.13	.10	-.06	.01	.05	.14	.12	.09	.13	.09	.15	.20	.12							
1.00	.26	-.15	-.01	.02	-.02	-.22	-.06	.01	-.14	-.04	-.07	-.32	-.27	-.08	.09	.03	.02	.04	.05	.18	.07	.03	.04	-.01	-.05	.02	.04	-.03	-.10	-.02								
1.00	-.03	.01	.01	.00	-.12	-.09	-.05	.30	-.07	-.16	.04	-.20	-.30	-.03	.00	-.15	.00	-.03	.05	-.01	-.04	.01	-.01	-.04	.01	-.01	-.04	.07	-.07	-.14	-.00							
1.00	-.01	-.11	-.09	.01	-.19	.01	-.02	-.01	-.03	.03	.07	-.02	-.11	.02	-.12	.07	.02	.11	-.02	.02	.06	.04	-.01	-.02	.04	.04	.04	.02	.03									
1.00	.06	.02	.03	.03	-.05	.06	.01	-.00	.03	.01	.20	.05	-.01	-.01	.00	-.06	.02	-.01	.05	.04	.03	.05	.04	.03	.05	.04	.01	.07	.04									
1.00	.06	-.08	.04	-.09	-.05	-.11	-.09	-.05	-.07	-.03	.02	-.09	.02	-.01	.02	.03	.04	.06	-.12	-.12	-.03	-.07	-.01	-.08	-.13	-.09												
1.00	-.02	-.05	-.15	-.17	-.04	-.12	-.03	-.12	-.03	.02	.08	.05	-.03	-.01	.04	-.05	-.02	.04	.06	.04	.11	.02	.06	.00	.06													
1.00	.14	.06	.20	.03	.20	.20	.27	-.04	.02	-.02	.08	-.04	-.04	-.15	-.04	.01	.03	.02	.04	.06	-.03	.06	.14	.03														
1.00	.12	.05	.14	.18	.06	.16	-.07	.11	-.03	-.04	.04	-.03	.01	.03	-.01	-.08	.03	.10	.03	.03	.01	-.01	.05															
1.00	.09	.12	.10	.05	.04	-.03	.01	.00	-.02	.07	.15	-.07	.01	.20	-.05	.02	.01	-.07	-.02	.04	-.01	.02																
1.00	.19	.23	.07	.27	-.03	-.03	-.01	.11	.01	-.01	-.07	-.01	.06	.01	.01	.02	-.01	-.04	.04	.05	.00																	
1.00	.49	.03	.09	-.02	.17	.11	.21	.06	.06	.06	-.03	.07	.04	.06	.06	.01	.07	.10	.10	.06																		
1.00	.20	.24	-.16	.18	.05	.12	-.01	.01	.08	.04	.05	-.01	-.00	.06	-.03	.01	-.08	.08	.02																			
1.00	.24	-.05	.69	-.20	-.04	-.07	-.05	-.03	.13	.04	-.09	.02	.01	-.00	.01	.01	.03	.02																				
1.00	-.06	.03	.06	-.00	-.13	-.13	-.12	.05	.14	.01	.05	.10	.06	.00	.06	.13	.07																					
1.00	-.10	-.05	.02	-.06	-.09	-.23	-.22	.02	.12	.12	.04	.15	.12	.04	.12	.10																						
1.00	-.08	-.02	.04	.07	.16	.21	.07	.07	.11	.09	.07	.09	.13	.09																								
1.00	-.04	-.03	-.01	.04	.02	.00	-.03	-.03	-.04	.04	-.05	.00	-.03																									
1.00	-.01	-.02	-.06	-.05	.00	.02	-.02	.00	-.01	-.08	-.01	.02	-.02																									
1.00	.92	.12	.00	.08	-.09	-.18	-.19	-.09	-.10	-.11	-.12	-.19																										
1.00	.18	.06	.09	-.09	-.18	-.19	-.08	-.10	-.08	-.12	-.19																											
1.00	.28	.02	.09	-.02	-.01	.01	.03	.12	-.01	-.02																												
1.00	.02	-.03	-.02	-.03	.02	.00	.08	.06	-.02																													
1.00	.05	.03	.08	.10	.03	.07	.03	.05																														
1.00	.72	.64	.59	.64	.67	.64	.73																															
1.00	.76	.57	.74	.70	.62	.98																																
1.00	.55	.70	.66	.61	.88																																	
1.00	.63	.69	.60	.60																																		
1.00	.75	.69	.77																																			
1.00	.70	.73																																				
1.00	.65																																					
1.00																																						

West Bengal

Three hundred and fifty-four schools were selected originally which were to provide data for nearly 6,800 pupils from four different regions, including the capital city of Calcutta. An additional list of 71 schools was also provided to meet the shortfall in the number of pupils, if any. The additional list did not include any schools from the capital city as it was assumed that the number of pupils in schools in the bigger cities would not be less than 25, the maximum number to be tested in any one school. The following table gives details of sample from which data were obtained.

Table 22.1
SAMPLES PLANNED AND ENTERED IN ANALYSES

Regions	No. of Schools		No. of Pupils	
Capital City	30 ¹	35 ²	750	546
North Bengal	144	169	2697	2335
Burdwan	77	93	1421	789
Presidency	103	125	1959	1541
Total	354	422	6827	5211

The State returned data for 76% of the pupils selected from 119% schools pointing to a big difference between enrolment (1986 statistics) and attendance. The obtained samples of pupils and schools gave an average of 12.7 pupils per school, which could be higher for urban areas and lower for the rural areas. Even from the city of Calcutta on the average, only 15.6 students were available from each school. The maximum shortfall in the pupil sample was from Burdwan area, followed by the city of Calcutta. The State-Centre approached many more schools to reach the targeted number of pupils. Nevertheless, the geographical representation of the sample got disturbed, its impact on the State means, if any, would be seen in the later sections.³

1 The number planned

2 The number for which data were retained for analyses.

3 It is likely that the differences in the proportion of pupils in different regions were more apparent than real as would happen if the differences in the attendance as against enrolment also varied over the regions.

Source

4 The School Questionnaire

5 The pupil Questionnaire.

6 The Teacher Questionnaire

The representativeness of the sample vis-a-vis the population from which it was drawn was also studied by comparing the obtained percentages of some of the variables against the ones obtained in the Fifth All India Educational Survey conducted by the NCERT in 1986.

Table 22.2

SAMPLE AS COMPARED TO THE POPULATION

Variable	Percentage	
	1986 Survey	Sample in the Study
Primary (only) Schools	99.8	98.6 ¹
Girl Students	43.4	42.8 ²
Scheduled Caste Students	24.8	32.5 ³
Scheduled Tribe Students	5.1	2.7 ³
Women Teachers	20.4	19.2 ⁶
Trained Teachers	64.1	66.7 ¹

The two deviations worth paying attention to were a rather high percentage of Scheduled Caste pupils and a low percentage of Scheduled Tribes students. The drive to improve enrolment and retention of socially handicapped groups had resulted in their higher proportion in the sample selected in 1991 as compared to the population statistics of 1986 in several States. However, the increment in the percentage of the SC group in the State was rather high. The decline in the ST group could be due to a higher rate of absenteeism on the part of the pupils. The survey statistics were with reference to enrolment while the data available from the sample in the study was based on the pupils who actually took the tests. It may be mentioned that the SC group had the highest mean achievement and the ST, the lowest and rather poor achievement.

A small difference of 1.2% in the proportion of primary (only) schools could be due to the upgrading of more schools during this period. There is a decline in the already low percentage of women teachers; the reasons were not clear but it could be because of the

preference of men respondents to the Teacher Questionnaire. An increase of 2.5% in 'trained teachers' was in the expected direction for a rather low existing percentage. Some of these deviations could also arise because of the imbalance in the proportion of samples contributed by the regions.

By and large, the sample from whom the data were returned from West Bengal was considered representative of the pupils and teachers in the primary schools of the State. The only large difference in the percentage of SC pupils could be due to a real change in the composition of the school group.

The Tests in the State

West Bengal could not participate in the try-out of the material⁷ thus losing the advantage of improving on its translations, particularly those of the language tests.

Bengali has a substantial overlap of vocabulary with Hindi, the language in which the original versions of the tests were developed, the translations were expected to remain faithful to the tests. The State representative participated in the meeting held for checking on the apparent comparability of the translations. The tests were found to be somewhat difficult for the State.

Table 22.3

DIFFICULTY VALUES OF THE ITEMS

Pass Percentage	Arith	RC(P)	RC(S)	W K	A W	S S	Spell.
0 - 9	-	-	1	-	-	-	-
10 - 19	1	3	1	-	1	-	1
20 - 29	10	11	1	4	-	-	5
30 - 39	11	7	6	19	2	-	9
40 - 49	7	12	4	13	6	3	4
50 - 59	5	7	2	3	10	8	3
60 - 69	3	2	1	1	4	5	3
70 - 79	3	2	-	-	1	2	-
Median	37.7	40.3	37.8	37.9	52.5	57.9	42.3

The three tests having higher pass percentages were all related to skills in writing. The tests on Sentence Structure and Spelling were constructed by the State itself. While the former turned out to be very easy, the latter was of moderate difficulty. Choice of Appropriate Word in writing also turned out to be easy. The choice of alternatives could render the test easy but on the other hand if a linguistic group spoke the language as it should be used, it would affect achievement on this test in the positive direction.

The test in arithmetic was found to be somewhat difficult.

The Groups in the Study

The Pupils

The data obtained from 5,211 students were used for analysing the achievement of primary school children who had studied up to Class IV in the formal school system. Nearly 80% of these children were from rural area, 43% were girls. The percentage of SC and ST groups were 32.5% and 3%, respectively.

The fathers of 51% children were farmers, 6% children came from families of unskilled or unemployed fathers. On the other hand, nearly 10% of the fathers were either professionals or had higher-salaried jobs.⁸ A relatively small percentage of 16% fathers and 32% mothers were illiterate, with another 35% of fathers and 37% mothers having studied only up to the primary stage. Only 6% fathers and 4% mothers had attended college. Twenty-five per cent of these children came from small families of one or two children.

Only 15% children had attended pre-school classes. The percentage of children who spoke a language other than Bengali at home was a small 6%. Eighty-one per cent children said they had most of the textbooks but the situation was not as good for the availability of other study material such as notebooks etc., less than half the group reported its adequate availability. Forty-six per cent of the children helped the family with domestic or occupation-related work for two or more hours every day.

A small 16% had some place earmarked at home where they could sit and study but 59% children reported receiving assistance from the family with their homework. Sixty-four per cent children reported they could attend school regularly, less than 4% had to miss it frequently.

A newspaper was received in 20% of the families, and magazines in 16%. Nearly two-thirds of the families had no books at home; 30% children said that they read some books other than their textbooks. Eighty-two per cent children did not have television at home, 6% watched it for one or more hours every day.

On the whole, the group of children from Bengal were neither particularly privileged nor deprived when compared with their counterparts from other States. On the positive side, fewer fathers/mothers were illiterate. A higher percentage came from small families and most of them spoke the same language at home as was the medium of instruction at school. On the other hand, few children had the privilege of attending pre-school, a very large group did not have TV at home.

⁷ It contributed some basic material for tests in the languages.

⁸ When seen along with 6% (only) fathers being graduates, not all the professional fathers were holding high-level jobs.

The Teachers

Of the four hundred and thirty-eight respondents to the Teacher Questionnaire, that formed the sample for primary school teachers, 82% were from rural area; 19% were women. Most of the teachers (73%) were in the age group 35-50, only 7.5% reported their age to be less than 35 years. In contrast to being older, 75% reported teaching experience of less than five years, the two sets of information -- one on age and the other on experience -- did not fit in easily.

Nearly half the teachers in the primary schools had studied only up to Class X, 2% had not passed their matriculation and 24% were graduates.

Fifty-three per cent teachers had not received any in-service education. Eighty-two per cent lived quite close to their place of work, requiring one hour or less to travel to and from their place of work. A small 5% lived at some distance, requiring two or more hours for this purpose.

The Headmasters

The following data regarding headmasters and schools were summarised from 417⁹ School Questionnaires. A large 21% of the headmasters were not trained; this fits in with 33% of all teachers in primary schools being untrained (see Table 22.2). Seventy-five per cent headmasters had had only one year of professional education, only 2% had gone through a two-year course, and another 2% had a B Ed degree. Most headmasters were 35 years and above in age, more than 50% being older than 50 years. Corresponding to their age, 93.5% had taught for more than 15 years; only 1% reported teaching experience of less than five years. Seventy per cent had also been headmasters for more than 10 years; only 15% reported their administrative experience being less than five years.

The headmasters in West Bengal were mature in age and experience, though their professional education could not be considered adequate.

The Schools

Eighty-four per cent of the schools in the sample were in rural area; 29% were managed by the State or the Central government with another 53% being run by local bodies. Private aided schools formed 17% of the sample, a negligible 1% were totally private. Barring 6% of the schools, the rest were all co-educational, more than 98% had only primary classes. Nearly 10% schools could be considered

as newly opened, having been in existence for less than 10 years.

Eighteen per cent schools had a separate room for the headmaster, nearly the same number had a room for the teachers as well. The facility of drinking-water was available in 65% of the schools but urinals for girls were found in only 15%.

A small percentage (9%) of schools had Book Banks. Seventy-two per cent headmasters reported that they did not detain children up to Class IV, on the other hand 13% reported detention of children in Class I itself, another 9% that did not respond might also belong to this very category. Only 22% of the schools in the sample have had the benefit of Operation Blackboard; a PTA existed in one-third of the schools, which had one to four or more meetings of the Association in a year.

Achievements of Pupils

Data available from 5,211 pupils are summarised in the tables that follow.

Table 22.4

MEAN ACHIEVEMENTS OF PUPILS

Test	Arith (40) ¹⁰	RC(P) (44)	RC(S) (16)	W K (40)	A W (24)	S S (18)	Spell (25)	Total (207)
Mean	16.4	17.5	6.0	15.9	12.4	10.5	10.0	98.7
SD	8.0	8.6	5.2	10.1	5.2	4.7	6.2	
Mean as Percentage	41.0	39.8	37.5	39.7	51.7	58.3	40.0	42.8
KR-20	.88	.90	.85	.91	.85	.85	.93	
All India Median as Percentage	41.2	45.4	43.1	49.5	41.7	57.8 ¹¹	42.8 ¹¹	45.2

The achievement in most tests was about 40%, which could not be considered satisfactory. Exceptions were tests on Sentence Structure and choice of Appropriate Word from the point of view of good writing. Both of these can be easily influenced by the manner of speech generally adopted by the language group. The test on Sentence Structure was prepared by the State Centre, and so was the test in Spelling. The poorest achievement was noticed in Reading Comprehension, although 30% of the children said they read something in addition to their textbooks.

The States also administered the test battery to a small sample of pupils of Class V selected from some of the schools in the sample. West Bengal collected data from a fairly large number of pupils of Class V.

⁹ The data from 5 out of 422 schools was either not available or was eliminated.

¹⁰ The maximum possible score.

¹¹ Tripura is excluded. The content of the tests was not common in all the States.

Table 22.5

ACHIEVEMENTS OF PUPILS — CLASSES IV AND V

Class	Arith	RC(P)	RC(S)	W.K.	A.W.	S.S.	Spell	Total
IV (5211)	16.4	17.5	6.0	15.9	12.4	10.5	10.0	88.7
V (477)	14.7	16.8	5.9	14.7	12.0	10.4	8.1	82.6

In all the seven tests the pupils of Class V had a lower average score, this included the test in arithmetic as well as the one in spelling, the two subjects which are learnt more in school than outside. It was difficult to understand the reasons for this situation, which incidentally was not unique to West Bengal.

The achievements of children were also studied region-wise.

Table 22.6

ACHIEVEMENTS OF PUPILS — REGION-WISE

Region	Arith	RC(P)	RC(S)	W.K.	A.W.	S.S.	Spell	Total
Capital	Mean 16.2	22.2	4.1	18.2	14.4	11.7	12.1	98.9
City (346)	SD 7.0	8.8	4.6	10.9	4.5	4.4	7.3	
North Bengal	Mean 18.7	18.0	8.0	17.6	13.6	10.8	9.2	95.9
(2335)	SD 8.9	8.9	5.1	10.1	4.9	4.4	6.2	
Burdwan	Mean 15.2	17.3	4.5	12.3	10.6	10.6	10.8	81.3
(789)	SD 6.6	8.0	4.8	9.7	5.7	4.7	6.2	
Presidency	Mean 13.7	15.9	4.5	14.3	10.9	9.7	10.0	79.0
(1541)	SD 6.2	8.1	4.7	9.3	5.3	5.1	5.6	

There were significant differences in the achievements of pupils in different regions of the State. It got divided into two parts, with North Bengal and Calcutta achieving a higher aggregate score and Burdwan and Presidency at the lower end of the achievement continuum.

It may be recalled that Burdwan had the highest shortfall in the pupil sample, thereby giving some advantage to the State in its mean score which got partially upset by the 100% sample from Presidency, another area where the pupils scored low. The range of differences in the means of different tests varied from 10% per cent to as high as more than 24%. The same were the maximum for the tests in Reading Comprehension (Sentences) and choice of Appropriate Word. The two tests had a common format of items.

The achievement of children on two tests, viz., Arithmetic and Reading Comprehension (paragraphs), was also studied objective-wise, and in case of Arithmetic, topic-wise too.

Table 22.7

ACHIEVEMENT IN ARITHMETIC — OBJECTIVE-WISE

Objective	Mean	SD	Mean as Percentage
Knowledge (19)	8.2	3.8	43.2
Understanding (12)	5.2	2.8	43.3
Application (9)	8.1	2.2	34.4
Total (40)	16.4	8.0	41.0

There was no difference in achievement on items involving Knowledge and Understanding. It is likely that not all questions categorised as Knowledge items were straightforward, they probably involved more understanding. The lower mean on Application items was in the expected direction.

Table 22.8

MEAN ACHIEVEMENT IN ARITHMETIC — TOPIC-WISE

Topic	Mean	SD	Mean as Percentage
Time (3)	1.4	1.0	46.7
Factors and Multiples (7)	2.7	1.6	48.6
Fundamental Operations (12)	4.7	2.6	39.2
Weights and Measures (3)	1.3	1.0	43.3
Fractions (5)	1.5	1.3	30.0
Decimals (7)	2.9	1.7	41.4
Unitary Method plus Others (3)	1.8	.9	60.0
Total (40)	16.4	8.0	41.0

A higher percentage for Topic 7 was noticed in nearly all the States. There were two items involving the Unitary Method and one on line segments. It is likely that these questions were similar to the ones given in the books and practised in the classroom. The next highest percentage in Time can be attributed to 'recency' as in most States, the topic was introduced in Class IV only. A low score of 39.2 percent in Fundamental Operations was rather disappointing as the pupils had been learning and practising basic operations for nearly three years by this time. A low percentage in Fractions, particularly in contrast to Decimals, could not be explained away easily, unless 'recency' was again a factor.

Table 22.9ACHIEVEMENT IN READING COMPREHENSION
OBJECTIVE-WISE

Objective	Mean	SD	Mean as Percentage
Noting Detail (17)	7.9	3.7	46.5
Simple Comprehension ¹² (13)	5.3	3.0	40.6
(13)			
Inference ¹³ (14)	4.4	2.9	31.4
Total (44)	17.5	8.6	39.8

12 This includes: (a) deriving meaning of difficult words from the context, and (b) relating things at a simple level.

13 This includes identifying the message or the central idea, and the title of the passage.

A relatively low mean in items involving Inference was in the expected direction. The young pupils are still learning the higher-level skills involved in getting the maximum from the material they read. The highest mean score, as expected, was on Noting Details, the mean was not as high as one would expect in reading simple material in the mother tongue. Nearly 4% pupils had a total score lower than 4 on the test, and a total of 26% had a score equal to or lower than what could be obtained by guessing the correct answer in the multiple-choice items.

The next three tables give differences in achievements of children when divided over location, gender and caste.

Table 22.10

DIFFERENCES IN ACHIEVEMENT — LOCATION-WISE

Test	Location	Mean	SD	t
Arith	U	16.2	7.7	1.11
	R	16.5	8.0	
RC(P)	U	18.0	8.6	2.10
	R	17.4	8.6	
RC(S)	U	5.1	4.6	6.57**
	R	6.3	5.3	
W K	U	16.9	10.3	3.89*
	R	15.6	10.1	
A W	U	13.0	4.7	3.98*
	R	12.3	5.4	
S S	U	11.1	4.5	4.96
	R	10.3	4.7	
Spelling	U	11.1	6.6	6.51
	R	9.7	6.1	
RC (total)	U	23.1	11.1	1.41
	R	23.7	11.5	
T (5 + 6 + 7)	U	35.3	12.0	7.05
	R	32.3	12.0	

Urban - 1067 Rural - 4144

* p < .05, ** p < .01

In general, the urban children tended to do somewhat better than the rural children. Out of the seven tests, five differences were in favour of the former, all of these being statistically significant though not large. In the test of Reading Comprehension, the rural children had a higher mean score, there was no difference on the test in arithmetic. The urban children had a total score of 91.5 against the 88.1 of the rural children, a small difference, educationally speaking.

On the gender divide, the differences were sharper with the boys doing better on all the tests and getting a total mean of 92.0 against the 84.5 of the girls. Girls formed only 42.7% of the sample, a somewhat lower percentage when compared with other States. The variables (or social prejudices) that were responsible for lower enrolment/attendance of the girls could also be contributing to their lower achievement.

Table 22.11

DIFFERENCES IN ACHIEVEMENT — GENDER-WISE

Test	Gender	Mean	SD	t
Arith	B	17.2	8.1	8.3
	G	15.4	7.6	
RC(P)	B	18.1	8.8	5.28
	G	16.8	8.4	
RC(S)	B	6.3	5.3	4.78**
	G	5.6	5.1	
W K	B	16.6	9.8	6.23**
	G	14.9	10.5	
A W	B	12.7	5.1	3.77
	G	12.1	5.5	
S S	B	11.0	4.7	8.93*
	G	9.8	4.6	
Spelling	B	10.1	6.4	1.63
	G	9.8	6.0	
RC (total)	B	24.4	11.4	6.17*
	G	22.4	11.3	
T (5+6+7)	B	33.8	12.2	5.97
	G	31.8	11.9	

Boys - 2983, Girls - 2228

** p < .01

Table 22.12

DIFFERENCES IN ACHIEVEMENT — CASTE-WISE

Test	Group	Mean	SD	t'
Arith	SC	17.5	8.4	20.97*
	ST	14.9	8.5	
	BC	18.7	7.9	
	Others	15.9	7.6	
	SC	17.7	8.6	
RC(P)	ST	15.9	8.4	2.17
	BC	17.1	8.1	
	Others	17.5	8.7	
	SC	7.0	5.3	
	ST	5.5	5.1	
RC(S)	BC	6.3	5.0	28.91*
	Others	5.5	5.1	
	SC	16.5	10.2	
	ST	13.9	10.4	
	BC	8.7	9.8	
W K	Others	15.9	10.0	29.59**
	SC	13.0	5.1	
	ST	10.1	5.9	
	BC	11.1	5.2	
	Others	12.3	5.3	
S S	SC	10.6	4.6	7.41**
	ST	8.9	5.0	
	BC	11.2	5.0	
	Others	10.5	4.7	
	SC	9.2	6.1	
Spelling	ST	8.7	5.5	21.62**
	BC	12.4	7.1	
	Others	10.3	6.2	
	SC	24.7	12.0	
	ST	21.4	10.9	
RC (total)	BC	23.4	11.9	9.83*
	Others	23.0	11.1	
	SC	32.9	11.8	
	ST	27.7	13.2	
	BC	34.8	12.4	
T (5+6+7)	Others	23.1	12.1	10.02
	SC	32.9	11.8	

SC - 1692 ST - 140 BC - 149, Others - 3230

** p < .01

On six out of seven tests, the caste groups differed significantly on achievement. On the basis of the aggregate score, Scheduled Caste children had the highest mean, followed by 'Others', Backward Classes and Scheduled Tribes, in that order.¹⁴ The difference between 'Others' and Backward Classes was the least, Scheduled Tribes had a very low mean. The respective proportions of ST and BC groups were also very small, each being less than 3%.

Factors Related to Pupil Achievement

Personal data with respect to age, gender, caste, area and home background of the pupils was regressed against achievement in Reading Comprehension and Arithmetic, separately. Before this analysis was undertaken, data on interrelated variables were combined to obtain composite scores on 'Home Backgrounds', 'Facilities for Learning' and 'Educational Environment at Home'.

The regression coefficients for the variables entered in the three composite variables are given below.

Home Background

	RC	Arith
Location	1.79	.42
Father's Occupation	-.20	-.35
Caste	-.79	-.62
Father's Education	.50"	.13
Mother's Education	.98	.53
Number of Siblings -	1.07	.23
R	.18	.15

** $p < .01$

'Caste' and 'Mother's Education' turned out to be the most significant contributors to the achievement of children. The differences over caste were noticed in Table 12.12. The contribution here has got somewhat dimmed because of the common rankings assigned to the castes in all the States. In Bengal, the percentage of illiterate mothers was on the lower side. In addition, 'Location', i.e., whether the child resided in an urban or rural area, 'Father's Education' and 'Size of the Family' made some difference to achievement in language. 'Father's Education' and 'Size of the Family' had 'r' equal to .10 and -.09 with this criterion variable. 'Father's Occupation' seemed to have some impact on achievement in Arithmetic. The observed 'r' was equal to -.07 only. The cumulative 'R's' were not very high.

Attending school regularly, smaller contribution in terms of time to the household and receiving help with homework were the more significant contributors to differences in achievement in either subject. Attending pre-school made no difference. In any case, only 15% of the

children reported having attended it. 'Availability of Notebooks' had some impact on achievement in Reading Comprehension but not in Arithmetic. As non-availability of textbooks was reported by a very small percentage, it did not contribute to the differences in achievement.

Facilities for Learning

	RC	Arith
Attended Pre-school	.25	.13
Place for Study	.49	.26
Help in Homework	2.12	-.88"
Availability of Textbooks	-.00	-.21
Availability of Study Material	1.53	-.03
Helping Household	-.55	-.97"
Regularity in Attendance	1.89"	1.23
R	.16	.13

** $p < .01$

Educational Environment at Home

	RC	Arith
Get Newspaper	1.12	.60
Get Magazines	1.24	.92"
Books at Home	.05	-.69'
Read Books	1.85'	.54
R	.13	.08

In general, the composite variables 'Educational Environment at Home' contributed to differences in the achievement of pupils. All the four variables made some contribution to at least one of the criterion variables; the two more consistent ones were 'Reads Books' and the family 'Gets Magazines'. The former, an individual-related variable, had significant regression coefficients in several States.

A significant regression coefficient with a negative sign of 'Books at Home' with achievement in Arithmetic was difficult to explain. It also had a negative but low value of 'r'.

The three composite variables and five others were regressed with achievement in Reading Comprehension and Arithmetic, separately.

Table 22.13(a)

CONTRIBUTION OF PUPIL-RELATED VARIABLES
TO ACHIEVEMENT IN READING COMPREHENSION

Variable	R	R ²	Increment in R ²	F	r
Word Knowledge	.4026	.1621	.1621	1007.98	.40
Facilities for Learning	.4199	.1763	.0142	89.62	.17
Home Background	.4310	.1858	.0095	60.59	.19
Similar Language	.4368	.1908	.0050	32.21"	.06
Educational Environ	.4407	.1942	.0034	22.24	.13
Gender	.4445	.1976	.0033	21.56"	-.09
Age	.4455	.1985	.0009	5.50'	-.06
Time Watch TV	.4459	.1989	.0004	2.68	.06

* $p < .05$; ** $p < .01$

¹⁴ Aggregate means were SC-91.6, ST-77.9, BC-85.6, Others-87.9

Table 22.13 (b)
CONTRIBUTION OF PUPIL-RELATED VARIABLES
TO ACHIEVEMENT IN ARITHMETIC

Variable	R	R ²	Increment in R ²	F	r
Word Knowledge	.3953	.1563	.1563	964.84	.40
Gender	.4034	.1628	.0065	40.37	-.11
Age	.4126	.1702	.0074	46.72	-.11
Facilities for Learning	.4148	.1722	.0020	12.33	.09
Similar Language	.4171	.1740	.0018	11.42	.03
Time Watch TV	.4135	.1751	.0012	7.35	.11
Home Background	.4200	.1764	.0012	7.76	.11
Educatl. Environ	.4204	.1767	.0003	2.05	.05

** $p < .01$

As in other States, the ability of the pupil, represented by the score in Word Knowledge, had the highest correlation with achievement in school. It was backed by two of the three composite variables, namely, 'Home Background' and 'Facilities for Achievement', 'Similarity of Language', 'Gender' and 'Age', 'Watching TV' contributed to increment in R^2 with Arithmetic and 'Educational Environment at Home' to that with Reading Comprehension. The former, namely, the relationship of watching TV with achievement in Arithmetic, was difficult to explain. Its zero-order correlation was near nil; the percentage watching TV was also quite small, being 12% only. It had probably been influenced by some variable not named here. The relationship of 'Educational Environment at Home' with achievement in Reading Comprehension only was more direct. The difference was noticed in r 's as well. Both 'age' and 'gender' had a negative, low but statistically significant, correlation with Arithmetic as criterion, age and gender contributed more independent variance than did the 'Home Background'. The achievements of boys and girls differed significantly and persistently in favour of boys.

In the composite variable 'Home Background', caste was likely to have disturbed the strength of the relationship noticed in other States. The direction (high/low) of the castes was determined in advance on the basis of general observation (or bias) with 'Others' assigned the highest score and BC, ST and SC following in descending order. However, in Bengal the SC group had the highest achievement followed by 'Others', BC and ST. This is likely to have disturbed the relationship of achievement with composite variables ('Home Background') to some extent.

R with Reading Comprehension was only slightly higher than R with achievement in Arithmetic.

The relationships of home background variables were studied in Tables 22.13 (a) and 22.13 (b). The cumulative R^2 s obtained were 20% and 18% for Reading Com-

prehension and Arithmetic, respectively. The former was lower than the country average of 27%. It has been said earlier that the group of children from West Bengal were neither particularly privileged nor deprived, i.e., so far as their home environment was concerned. In relation to home background variables, a higher R^2 for Reading Comprehension than for Arithmetic was expected. In West Bengal, the difference was small though direction was the same as expected.

A similar exercise studying the influence of school-related variables was also undertaken in which the information available about the background and experience of the headmasters, along with policies and practices followed in schools were regressed against achievement on the two criterion variables. Teacher related variables were not entered in the analysis. In this exercise, the average achievement of all the pupils of Class IV of the school, who responded to the test battery was used in the place of the score obtained by the individual pupil.

The schools in West Bengal were more varied in their average achievement than in several other States. The standard deviation of the distribution of 399 means in arithmetic was 6.9 scores as compared to 8.0 of the distribution of more than 5,200 pupils of Class IV from these schools. Apart from schools being genuinely different from each other, several school means tended to be as large or small as the scores of the pupils because of the small number of students that responded to the tests. When there was only one pupil, the school mean was the same as the score of the pupil.

Table 22.14(a)

CONTRIBUTION OF SCHOOL-RELATED VARIABLES TO ACHIEVEMENT IN READING COMPREHENSION

Variable	R	R ²	Increment in R ²	F	r
Facilities for Teachers	.1396	.0195	.0195	7.90	.14
Proportion SC/ST	.1847	.0341	.0146	6.00	.10
Rooms per class	.2154	.0464	.0123	5.10	.08
Group					
Administration of School	.2285	.0522	.0058	2.41	-.05
Books in the Library	.2425	.0588	.0066	2.72	-.06

* $p < .05$; ** $p < .01$

Although all the 31 variables given in the list at the end of the report were regressed with the two criteria, in Table 22.14 (a) and (b) only those which contributed a statistically significant increment to R^2 and a few more down the line were retained. The total contribution to R^2 for Reading Comprehension was 9%, and that for Arithmetic, 10.5%. Both the values were very much lower than the respective country medians of 26% and 30%.

Compared to the R^2 values obtained for impact of home-related variables on the achievement of the pupils, the values of R^2 obtained in these two tables were lower still. Only a very small proportion of variability arose because of the differences in the physical facilities and the functioning of the school on which data were collected in this study.

Table 22.14(b)

CONTRIBUTION OF SCHOOL-RELATED VARIABLES
TO ACHIEVEMENT IN ARITHMETIC

Variable	R	R^2	Increment in R^2	F	r
Operation Black-board	1323	0175	0175	7.07	.13
Age of the Pupil	1606	0258	.0083	3.39	-.09
Books in the Library	1803	0325	.0067	2.75	-.08
Rooms per Class Group	1970	0388	.0062	2.55	.07
Facilities for Teachers	2161	0467	.0079	3.27	.09
Working Days	2317	.0537	.0070	2.91	-.07
Pre-Primary Classes	2476	.0613	.0076	3.16	-.06
Teaching Experience of Headmaster	2612	0682	.0068	2.88	-.08
Proportion SC/ST	2717	0738	.0056	2.37	.08

** $p < .01$

The schools did differ on some of the variables such as the administrative authority that was responsible for their management, the length of time they had been in existence, the facilities they had, and so on, but few of these variables seemed to make any difference to the level of learning achieved by the schools.

There was not a single variable which made a significant contribution to R^2 with respect to both the criteria, the closest that came to it was availability of space per class group. According to the information provided by the headmasters, the average availability was not very poor being nine rooms, including verandahs, for a class group. It could be the variation in different parts of the State that gave rise to the values of R^2 .

'Facilities for Teachers' and 'Proportion of SC/ST' pupils also made a statistically significant contribution to R^2 with respect to Reading Comprehension. Both the variables found a place in Table 22.14 (b) as well. Differences in the achievement of the various caste groups were noticed in Table 22.12 as well. 'Operation BlackBoard' alone had a significant F in relation to differences in mean achievement in Arithmetic.

A very small proportion of variance related to differences between school means was contributed by a few variables in West Bengal. The differences in physical facilities and expressed policies and practices seemed to have little impact on the average achievement of the schools. Other, more significant, variables seemed to have escaped attention in this study. An in-depth analysis could probably help.

INTER CORRELATIONS OF PUPIL-RELATED VARIABLES AND ACHIEVEMENT

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
1	100	03	02	02	-17	-03	-37	-29	-24	22	-07	-08	-01	-18	-08	-14	-29	-28	-30	-36	-31	02	-03	09	-05	-06	-07	-09	-02	10	-16	-43
2	100	-08	00	-03	-01	03	-11	-05	14	-03	-05	-08	05	-06	-06	-02	04	01	-02	03	-11	-05	-05	-08	-04	-06	-04	-06	-09	04	-00	
3	100	07	07	03	00	07	12	04	05	06	-00	02	11	00	01	-03	05	07	01	-11	-07	-07	-09	-05	-12	-02	-09	04	-04	04		
4	100	-08	06	-06	-20	-15	05	-02	-02	-03	-02	03	-01	-11	-11	-11	-04	-01	-10	-07	-07	01	-08	-07	-08	-05	-05	-26	-02	-10		
5	100	10	10	07	21	20	-09	-01	05	07	10	13	03	12	08	12	16	18	-09	-01	-12	-02	-06	-01	09	-06	-34	03	17			
6	100	-07	04	05	03	-12	02	11	00	04	10	03	-11	05	04	04	03	07	01	-03	01	07	02	06	-04	03	00					
7	100	23	22	-12	13	05	-08	13	06	01	23	25	19	21	18	00	03	-02	08	04	-00	07	02	10	11	30						
8	100	50	-23	14	15	12	12	11	10	30	25	36	37	33	04	15	-03	15	10	10	19	10	53	05	+3							
9	100	-20	19	13	10	19	15	08	34	28	25	20	24	07	09	12	24	21	02	12	12	66	09	34								
10	100	-06	-08	-05	-10	-15	-03	-14	-12	-18	-24	-18	01	-13	03	-08	-04	-13	-12	-09	-45	-02	-25									
11	100	13	-14	11	08	02	20	21	13	11	13	00	00	03	04	07	-03	06	01	17	09	21										
12	100	03	10	09	01	13	14	07	11	08	-06	-07	-065	-07	05	-05	-02	-08	-11	-49	16											
13	100	15	-05	09	-02	-15	00	04	00	-01	02	02	00	03	01	00	02	03	12	-03												
14	100	13	06	12	08	15	15	09	-02	07	09	06	11	-06	02	10	08	58	17													
15	100	12	05	04	11	09	08	-09	-00	-04	-03	-01	-01	-00	-02	08	-11	09														
16	100	08	03	10	06	08	07	07	08	05	07	05	07	05	07	09	03	57	08													
17	100	47	27	24	26	04	11	00	13	13	09	10	08	21	07	62																
18	100	26	25	34	05	13	-03	14	-09	08	05	10	11	07	18	11	54															
19	100	36	02	17	-04	03	05	14	18	11	14	07	84																			
20	100	-00	15	12	08	05	11	15	06	14	06	44																				
21	100	49	38	40	44	47	35	54	11	09	05																					
22	100	32	33	38	56	39	90	16	13	19																						
23	100	33	35	20	13	70	14	15	-03																							
24	100	38	24	26	40	23	12	10																								
25	100	37	21	45	19	09	13																									
26	100	42	51	09	02	15																										
27	100	35	11	08	19																											
28	100	19	17	13																												
29	100	03	24																													
30	100	10																														
31	100																															
32	100																															

Table 22-B

INTER CORRELATIONS OF SCHOOL-RELATED VARIABLES AND ACHIEVEMENT

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39																				
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Delhi

Approximately 2,000 pupils of Class IV were to be selected from 85 schools identified in four different zones of the city for responding to this test battery in Delhi. Data were made available for 1559 students from 78 schools. As per the enrolment statistics, the number of children in Class IV was much higher than 25, the maximum to be tested in a school. Thus 25 pupils, the maximum number to be tested in a school, were expected from all the schools that were approached.

Table 23.1

SAMPLES PLANNED AND ENTERED IN ANALYSIS

Regions	No. of Schools		No. of Pupils	
City Zone	16 ¹	20 ²	400	393
West Zone	27	23	675	430
North Shahdara	32	27	800	621
Rural Area (Narela)	10	8	250	115
Total	85	78	2125	1559

In general, 73% of the pupil sample was obtained from 92% of the schools approached. In addition, 223 students of Class V were also tested in Delhi. Assuming that the pupils of the two classes were tested as one group of 25 -- the maximum number recommended for the group testing -- the average reached nearly 23 per school. It was particularly low in the rural area of Narela.

While 98% of the targeted number was obtained in the city zone, only 46% of the number expected from the rural area responded to the tests. The proportion of obtained against expected in the West zone was also limited to 64%, creating some imbalance in the self-weighted (area-wise) sample. The impact of these changes is discussed under "Achievements of Pupils".

The validity of the sample was also checked by comparing some of the statistics available from this sample with those obtained in the Fifth All India Educational Survey conducted by the NCERT in 1986.

1 The number planned

2 The number obtained

Source

3 The School Questionnaire.

4 The Pupil Questionnaire

5 The Teacher Questionnaire

Table 23.2

SAMPLE AS COMPARED TO THE POPULATION

Variable	Percentage	
	1986 Survey	Sample in the Study
Primary (only) Schools	82.1	95.1 ¹
Girl Students	45.6	56.4 ¹
Scheduled Caste Students	21.2	22.1 ¹
Scheduled Tribe Students	0.1	1.9 ¹
Women Teachers	56.7	72.8 ¹
Trained Teachers	99.0	99.1 ¹

Except for the percentage of trained teachers, which in any case, was nearly 100% even in 1986, all other statistics obtained in this sample varied from the 1986 survey status. The reasons for the differences were probably (i) comparability of data from the survey and this sample, (ii) the choice of schools in the Union Territory. Delhi has a large number of private aided or completely private schools with Classes I to XII, most of these teach through the medium of English. While these would have formed part of the 1986 survey, they were not part of the population in this study. Only schools that used Hindi as the medium of instruction formed the target group. Thus the list of schools used for selecting the sample had predominantly primary schools only.

The fact that there were more girl students obviously due to the inadequate care taken about the double-shift schools. If the school was mentioned only once in the list and it worked in two shifts, teaching girls in the morning and boys in the evening, vagueness entered into specifying the school. The field staff probably found it more convenient to work in the morning shifts. Nagaland and Delhi were the only two administrative units to have a large number of schools exclusively for boys or girls.

The fact that there were more women teachers could be partly due to the larger proportion of girls' schools as also due to women seeking employment in large numbers.

The other deviations were minor and in the expected direction.

On the whole, a larger proportion of primary (only) schools was not considered a deviation from the population as this population was basically different from the survey group. But the larger number of girls was a source of bias in the sample which tended to increase the State means to some extent (see Table 23.11).

The Union territory of Delhi started the work related to the study at a later stage but it participated in the beginning stages of the work informally as some of the item formats or drafts of tests were tried out in Delhi. Some teachers were also consulted. However, the tests proved to be a bit difficult for Delhi.

Table 23.3

DIFFICULTY VALUES OF TEST ITEMS

Pass Percentage	Arith	RC(P)	RC(S)	WK	A W	SS	Spell
0 - 9	-	1	-	-	-	-	-
10 - 19	4	1	-	-	1	-	2
20 - 29	12	3	2	-	2	-	2
30 - 39	12	13	4	8	1	1	6
40 - 49	6	14	5	19	7	8	9
50 - 59	3	9	4	10	1	6	3
60 - 69	2	3	-	3	6	3	3
70 - 79	1	-	1	-	-	-	-
Median	32.8	42.4	43.5	15.8	46.6	49.5	42.3

Except for the test on sentence structure, the median pass percentage on all other tests was less than 50, the lowest, 32.8, was in Arithmetic. Only 29.5% items were marked correctly by more than half the pupils.

In Delhi, as in other capital cities, the children of well-to-do parents with higher income and education study in schools where the medium of instruction is English. That group did not form part of the population. To the extent, that the income and education of the parents would influence learning at school, it was a truncated group.

The Groups in the Study

The Pupils

Data from 1559 pupils was used for the study. Only 21% of these children were from the rural areas; 56% were girls. The number of children of Scheduled Tribes was negligible, being less than 2%, Backward Classes was another 5%, and SC 22%, 'Others' formed the largest group, being 71% of the total. The average age of these children was 9.7 years. With the exception of Kerala and Meghalaya, the percentage of illiterate fathers in Delhi was the lowest, being 10.5% only, the same was not true of the mothers. The statistic of 40% illiterate mothers was higher than that of Kerala, Meghalaya, West Bengal, Sikkim and Tripura. In addition, another 13% fathers and 22%

mothers had studied up to the primary level only. On the other side, the percentage of graduates was highest, the figures being 26% for fathers and 10% for mothers. As would be expected from a city like Delhi, only 24% fathers were farmers, 8.6% were professionals or employed with higher-level salaries. Businessmen and skilled-worker fathers together were a high 55.4%. Eleven per cent had unspecified work (including unemployment). Only 39% children came from families having four or more children.

Nine per cent children spoke some language other than Hindi at home. Considering the composition of the population of Delhi from a large number of linguistic groups, this was a bit surprising. It is likely that young children who were born and brought up here spoke the language of the region. This language, also being the national language, the parents could be encouraging it.

Forty-six per cent of these children had attended some pre-school programme, 48% said they had some place at home where they could sit and study, and 74% received help from their families in doing their homework. Only 2% children said they had got only a few of the textbooks, the comparable percentage for other study material was slightly higher. Thirty-two per cent of the children helped their families with domestic or occupation-related work for two or more hours a day. Sixty-two per cent children attended school most of the days but 36% had to miss it sometimes.

As compared to most other States, more homes had newspapers (47%) and magazines (39%). Half the homes had some books, 67% children also reported reading some books other than textbooks. Eighty-eight per cent children watched TV, with 60% spending one or more hours every day on it.

In brief, the children in the metropolis of Delhi had some advantages as compared to the groups from other States. The parents, on the average, were better educated and better employed. A fairly large percentage of the children had attended pre-school, more of them received help in the school-related tasks from their families. But irregular attendance was reported by not too small a percentage.

The Teachers

One hundred and sixty-two teachers responded to the questionnaire meant for eliciting information about their educational background, the facilities they have and the practices they adopt in organising teaching-learning in their classrooms. Twenty-seven per cent of these teachers were teaching in rural areas around the city, 73% were women. They were a mature group, only 28% being younger than 35 years of age. Corresponding to their age they were also an experienced group, only 15% had taught for less than five years.

Most of the teachers in Delhi — 70% — were graduates, another 19% had studied up to Class XII, only 10% had not studied beyond the matriculation. They were probably the older group as general education up to higher secondary was made the minimum requirement for recruitment of teachers in primary schools in Delhi quite a few years ago. Corresponding to a high percentage of graduates and post-graduates, 50% of the teachers also had a B Ed degree, 35% had professional education meant for preparing teachers for primary school for two years and only 15% had gone through a similar course for one year only. The facility of in-service education was accessible to most of the teachers; 77% reported having received some

Although a large proportion of working force in the metropolis is said to be spending hours in commuting to and from work, the teachers seemed to be well placed in this respect, 44% reported spending less than one hour for this purpose, which meant walking (cycling) to their place of work, another 28% spent between half to one hour travelling to and from school; only 8% had to spend two or more hours every day in travelling.

The teachers were very forthright in saying they did not adopt any innovative practices in teaching, only 2% said they did. But they did feel that such efforts would enhance both the interest and achievement of pupils.

Nearly sixty per cent teachers reported frequently using material other than textbooks in their teaching, 38% had developed plenty of such material themselves and another 60% said they had prepared some of it. Eighty-eight per cent teachers had involved the young pupils also in this activity. Nearly two-thirds of the teachers evaluated their pupils 2-3 times a year, 35% reported monthly evaluation, but 30% teachers used evaluation for one purpose only.⁶

Only 39.5% teachers had their own copies of the textbooks, another 30% had the library copies while 30% borrowed them from the pupils, probably on the spot. Twenty-three per cent teachers had no access to a Hindi language dictionary, 35% had their own copies.

Two per cent teachers asked the parents of weak pupils to arrange private tuition, the majority helped them by paying special attention in the class itself. Ninety-one per cent teachers checked pupils' homework regularly; the rest did it sometimes. Seventy-five per cent teachers said pupils often asked questions in class, indicating a relaxed rather than an authoritarian environment.

Delhi had more graduates as well as women teachers. They did not have to spend too much time in commuting to school. They were quite conservative in trying out new practices.

The Headmasters

This description of headmasters and primary schools in Delhi is based on the responses received on 82 School Questionnaires. Sixty-one per cent headmasters were above 50 years of age, only 7% were younger than 35 years. Ninety per cent had been teaching for more than 15 years, 5% had taught for less than five years, but 26% had been headmasters for less than five years. With the exception of one, all headmasters were trained but the majority (55%) had received one year of professional education meant for training primary school teachers, 21% had a B Ed degree.

The Schools

As would be expected, 78% of the schools were in urban areas. A very large percentage (84%) were managed by the local bodies; 6% were run by the State or Central government, the remaining rest 10% were equally divided as private and private aided schools. Ten per cent of the schools in the sample had been started in the last six years; on the other hand, 58.5% had been in existence for more than 20 years. Only 5% of the sample came from the primary sections of middle schools, the rest 95% were from primary (only) schools. In contrast to most other States, the Union Territory had many more schools exclusively for boys or girls, only 40% were co-educational.

Sixty per cent schools also had pre-primary sections. Schools in the capital seemed well off so far as space was concerned, with 83% reporting having a separate room for the headmaster. Twenty-three per cent also had a common room for the teachers. Drinking-water was available in 93%, and separate urinals for girls in 74% of the schools. Seventeen per cent schools omitted to respond to this question, this could mean common urinals for boys and girls.

There was no uniformity regarding 'No-Detention' Policy' being followed in schools in Delhi, 66% headmasters said they followed it up to Class III, 22% detained pupils in Class I, 11% did not detain them up to Class II. Operation Blackboard had not touched 55% of the schools. (It is likely that they did not need it.) A PTA existed in 93% of the schools but only 83% reported having any meetings.

Schools in Delhi had good physical facilities. There were more single-sex schools than elsewhere in the country. There was no clear policy regarding 'No Detention'.

⁶ The following purposes were suggested in the questionnaire. (i) promotion, diagnosing weaknesses in learning, (ii) diagnosing weaknesses in teaching

Achievements of Pupils

Delhi returned data for 1,559 students of Class IV. The average scores on each of the seven tests administered are given below.

Table 23.4

ACHIEVEMENTS OF PUPILS

	<i>Arith</i> (40) ^a	<i>RC(P)</i> (44)	<i>RC(S)</i> (16)	<i>W K</i> (40)	<i>A W</i> (24)	<i>S S</i> (18)	<i>Spell</i> (23)	<i>Total</i> (207)
Mean	11.3	18.9	7.2	18.8	11.3	9.3	10.7	90.5
SD	7.8	9.2	1.3	9.4	5.5	4.8	7.3	
Mean as Percentage	45.7	42.9	45.0	47.0	47.1	51.7	42.8	44.7
KR-20	88	90	85	91	85	85	93	
All India	11.2	15.1	44.1	49.5	11.7	57.8 ^b	12.8 ^b	45.2 ^c
Median as Percentage								

The overall percentage score of 43.7 was not considered satisfactory, it was lower than the median value in the country. More than 70% of the teachers in Delhi were graduates, all of them were trained, (A fairly large number had a BEd degree which may not be very helpful for teaching primary classes.) Schools also had reasonable facilities such as space, teachers, library, etc., but the achievement of the pupils was lower than the country average.

The lowest means were on tests of arithmetic and spelling, the two tasks dependent more specifically on teaching in school. The three tests, performance on which would be affected more easily by the environment, namely, Word Knowledge, Appropriate Word and Spelling, had relatively higher mean scores.

Two hundred and twenty-three pupils of Class V selected from some of the schools in the sample were

administered the same battery of tests. The purpose was to study gain in achievement in one year.

Table 23.5

CLASS ACHIEVEMENTS OF PUPILS — CLASSES IV AND V

<i>Class</i>	<i>Arith</i>	<i>RC(P)</i>	<i>RC(S)</i>	<i>W K</i>	<i>A W</i>	<i>S S</i>	<i>Spell</i>	<i>Total</i>
IV (1559)	11.3	18.9	7.2	18.8	11.3	9.3	10.7	90.5
V (223)	16.0	20.3	7.7	19.4	11.8	9.7	10.8	95.7

Although all the differences were in the expected direction, the same were not sufficiently large. According to the 1986 survey, there were 9% fewer pupils in Class V than in Class IV. Assuming that a certain percentage of pupils of Class IV were not promoted to Class V because of poor performance, the mean scores of the rest of the pupils would rise. The gain over a year of schooling was considered quite poor.

Differences in five out of seven tests were less than one, the maximum difference was on the test in Arithmetic.

The achievements of children in various States were also studied region-wise as the same would help the States to identify regions which were weak educationally. At the sampling stage, Delhi was also divided into four zones. The average achievements of pupils from these zones were as shown in Table 23.6.

Narela not only had the lowest mean, its mean was much lower than of any other area. The proportion of sample obtained with reference to the expected number was less than 50%, it helped the overall average to become somewhat higher. In contrast, nearly all the expected sample was reached in the city zone, which too had lower than the overall average mean. The achievements in North Shahdara and West Zone were not very different.

Table 23.6

ACHIEVEMENTS OF PUPILS — ZONE-WISE

<i>Area</i>	<i>Arith</i>	<i>RC(P)</i>	<i>RC(S)</i>	<i>W K</i>	<i>A W</i>	<i>S S</i>	<i>Spell</i>	<i>Total</i>
City Zone (393)	Mean SD	13.4 6.1	17.3 8.2	6.8 4.1	19.1 8.2	10.9 5.1	8.1 4.4	10.2 6.6
West Zone (430)	Mean SD	14.0 8.1	19.1 9.5	7.0 4.3	20.6 9.0	11.4 5.5	9.7 5.1	11.4 6.9
North Zone Shahdara (621)	Mean SD	15.7 8.4	20.7 9.4	7.9 4.4	18.3 10.2	11.9 5.6	9.6 4.7	10.6 7.9
Narela (115)	Mean SD	11.2 6.8	13.7 7.2	5.0 4.0	14.7 9.5	9.4 5.4	8.4 4.9	10.0 7.1

7 This is probably because of the double-shift system for many school buildings where the girls and boys are taught separately in morning and evening shifts.

8 The maximum possible score.

9 Tripura is excluded. The content of the tests was not common in all the States.

The performance of pupils on two of the tests - Arithmetic and Reading Comprehension - was also studied objective-wise, and in the case of Arithmetic, topic-wise also.

Table 23.7

ACHIEVEMENT IN ARITHMETIC - OBJECTIVE-WISE

Objective	Mean	SD	Mean as Percentage
Knowledge (19)	7.2	4.8	37.9
Understanding (12)	1.4	2.8	36.7
Application (9)	2.7	2.1	33.3
Total (40)	11.3	7.8	35.7

The percentage mean score on 'Application' items was expected to be lower than on 'Knowledge' or 'Understanding'. Little or no difference between items categorised under these two heads was observed in many States. A relatively high percentage of success on Unitary Method plus Others had been noticed in nearly all the States. The questions asked were probably similar to the ones given in the textbooks and practised in the classroom. Teaching is also carried out with early introduction of rules. In the other two topics, having relatively higher means, (Time and Decimals) 'recency' in introduction of these two topics could also be a factor.

Table 23.8

ACHIEVEMENT IN ARITHMETIC - TOPIC-WISE

Topic	Mean	SD	Mean as Percentage
Time (3)	1.2	1.0	40.0
Factors and Multiples (7)	2.2	1.6	31.4
Fundamental Operations (12)	4.9	2.6	32.5
Weights and Measures (3)	.9	.8	30.0
Fractions (5)	1.6	1.4	32.0
Decimals (7)	2.9	1.7	41.4
Unitary Method and Others (3)	1.5	1.0	50.0
Total (40)	11.3	7.8	35.7

Table 23.9

ACHIEVEMENT IN READING COMPREHENSION OBJECTIVE-WISE

Objective	Mean	SD	Mean as Percentage
Noting Detail (17)	8.3	4.2	48.8
Simple Comprehension ¹⁰ (13)	5.5	3.1	48.3
Inference ¹¹ (14)	5.1	2.8	36.4
Total (44)	18.9	9.2	42.9

The mean scores broken over objectives were in the expected direction but 49% score on an objective such as receiving simple information from a write-up in the medium of instruction (which was also the mother tongue for a large number of pupils) was quite discouraging. Nearly 25% of the pupils had a score equal to or less than what could be achieved by guessing blindly.

The differences in the achievements of pupils when divided over location, gender and caste were also studied. The relevant details are presented in the following tables.

Table 23.10

DIFFERENCES IN ACHIEVEMENT - LOCATION-WISE

Test	Location	Mean	SD	t
Arith	U	11.5	7.5	2.18
	R	13.5	8.8	
RC(P)	U	19.6	9.1	5.62*
	R	16.1	9.3	
RC(S)	U	7.6	4.2	7.13
	R	5.7	4.5	
W.K.	U	19.2	9.3	3.00
	R	17.5	9.7	
A.W.	U	11.6	5.4	4.92
	R	10.3	5.6	
S.S.	U	9.3	1.7	1.13
	R	8.9	4.9	
Spelling	U	10.8	7.2	.81
	R	10.4	7.6	
RC (total)	U	27.1	12.2	6.65*
	R	22.1	12.6	
1(5 + 6 + 7)	U	31.7	11.5	2.30
	R	29.6	16.2	

Urban - 1227 Rural - 332

* $p < 0.05$, ** $p < 0.01$

Twenty-one per cent of the pupil sample came from rural areas. Because of their close proximity to the metropolis, this sample may be somewhat different from the rural children selected in the States. Its achievement on all the seven tests was lower than that of the urban group. Five of these differences were statistically significant adding up to a big difference in the total score. The rural children had an aggregate mean score of 82.7 against the 92.5 achieved by the urban group.

The rural group of the Union Territory could belong to the less aspiring families, the teachers could also be more dissatisfied due to their posting not being in the city. Although only 8% teachers reported spending two or more hours every day for travelling to and from school, some of them could be residing in the city and working in the rural areas.

10 This includes (a) deriving the meaning of difficult words from the context, and (b) relating things at a simple level.

11 This includes identifying the message or the central idea, and the title of the passage.

Table 23.11

DIFFERENCES IN ACHIEVEMENT — GENDER-WISE

Test	Gender	Mean	SD	t
Arith	B	13.7	7.2	2.56
	G	14.8	8.2	
RC(P)	B	18.0	9.1	3.44*
	G	19.6	9.2	
RC(S)	B	7.0	4.3	86
	G	7.2	4.3	
W K	B	19.3	9.4	1.65
	G	18.5	9.4	
A W	B	11.3	5.7	10
	G	11.3	9.4	
S S	B	9.2	4.7	19
	G	9.3	4.8	
Spelling	B	10.3	7.0	1.81
	G	11.0	7.4	
RC (total) †	B	25.0	12.4	2.84
	G	26.8	12.4	
T (5 + 6 + 7)	B	30.9	15.3	91
	G	31.6	14.6	

Boys - 679, Girls - 880

* p < 0.05, ** p < 0.01

In the Union Territory, 56% of the pupil sample were girls. A higher percentage of girls in the sample was due to the inclusion of nearly twice the number of girls' schools as against the boys' schools.

The girls also did better than the boys in at least three tests, the differences in two were statistically significant. The boys had higher means only on Word Knowledge but the difference was not statistically significant. The aggregate means were 91.7 for girls and 88.8 for boys—a small difference only.

The variation among the caste groups was rather high, the total score fluctuating from 75.8 for the SC group to 102.2 for ST. Even if the small group of ST children was ignored, the next mean (aggregate) was 95.5 achieved by 'Others'. The 'Backward Classes' group (n=80) had a score of 78.7, quite close to that of SC children. Thus, if the small 2% sample of STs was ignored, 'Others' had the highest score.

The Scheduled Tribe children could be the offspring of educated parents who may be employed on salaried jobs, more likely with the government.

Factors Related to Pupil Achievement

Data regarding 'Home Background' and other individual-related variables were regressed with pupils' performance. Regression analysis was carried out against two criteria. Before this analysis, data on groups of variables were combined to obtain composite scores on 'Home Background', 'Facilities for Learning' and 'Educational Environment at Home'.

Table 23.12

DIFFERENCES IN ACHIEVEMENT — CASTE-WISE

Test	Group	Mean	SD	t
Arith	SC	12.2	7.6	12.32
	ST	16.5	7.8	
	BC	13.3	7.5	
	Others	15.0	7.8	
RC(P)	SC	15.7	8.4	21.77
	ST	22.5	9.3	
	BC	16.9	9.1	
	Others	19.9	9.2	
RC(S)	SC	5.9	3.9	20.47
	ST	8.7	4.2	
	BC	5.2	4.5	
	Others	7.6	4.3	
W K	SC	16.1	9.3	17.93
	ST	24.2	9.3	
	BC	16.8	10.2	
	Others	19.7	9.2	
A W	SC	9.3	5.3	29.25
	ST	13.9	6.1	
	BC	9.3	5.0	
	Others	12.0	5.3	
S.S	SC	7.9	4.2	16.48
	ST	8.9	5.2	
	BC	7.7	4.3	
	Others	9.8	4.9	
Spelling	SC	8.6	6.9	17.20
	ST	7.6	8.0	
	BC	9.4	6.4	
	Others	11.5	7.3	
RC (total)	SC	21.7	11.2	24.92
	ST	31.2	12.6	
	BC	22.1	12.0	
	Others	27.5	12.5	
T(5 + 6 + 7)	SC	25.8	13.2	26.31**
	ST	30.3	16.4	
	BC	26.5	13.4	
	Others	23.3	15.0	

SC-345, ST - 30, BC - 80, Other - 1104

** p < 0.01

The regression coefficients for the variables entered in the three composite variables are given below.

Home Background

	RC	Arith
Location	-4.23*	-66
Father's Occupation	-37	-47
Caste	1.45	61
Father's Education	35	44
Mother's Education	62*	15
Number of Siblings	-1.10	-79*
R	.30	.26

* p < 0.05, ** p < 0.01

All the variables listed under 'Home Background' seemed to have some bearing on achievement of pupils.

in schools. The stronger influence indicated was that of 'Father's Occupation', 'Caste' and 'Number of Siblings' which had statistically significant regression coefficients for the combination of independent variables in maximising R with either of the two criterion variables. Other variables had significant regression coefficients for one or the other dependent variable. 'Location' and 'Mother's Education' contributed more to differences in achievement in language, and 'Father's Education' to that in Arithmetic.

Facilities for Learning

	RC	Arith
Attended Pre-school	2.10	.99
Place for Study	3.37	2.13
Help in Homework	-.01	.24
Availability of Textbooks	.13	-1.10
Availability of Study Material	2.18	1.45
Helping Household	-.70	-.75
Regularity in Attendance	2.40	1.51
R	.25	.24

* $p < .05$, ** $p < .01$

The most significant contributors to differences in achievement were 'Attended Pre-school', 'Place for Study', 'Availability of Study Material' and 'Attending School Regularly'. The greater demand on the child's time for help to the family had a negative contribution. The regression coefficient with respect to Arithmetic was statistically significant. The negative direction of regression co-efficients for 'Availability of Textbooks' in relation to Arithmetic was hard to explain.

Educational Environment at Home

	RC	Arith
Get Newspaper	1.71	.48
Get Magazines	2.08	2.14
Books at Home	.50	.35
Read Books	2.41	1.05
R	.20	.20

* $p < .05$, ** $p < .01$

Availability of Books at home did not have a significant regression coefficient independent of the other variables although the variability in the responses was there with 50% reporting having books at home (varying in number). It was reading books, which could be available through lending libraries, and receiving magazines at home that seemed to contribute more to the differences in achievement.

The three composite variables, along with five others, were regressed with the two criterion variables with

the purpose of studying their contribution to differences in pupil achievement. Contributions to R^2 are summarized in Table 23.13.

Table 23.13(a)

CONTRIBUTION OF PUPIL-RELATED VARIABLES
TO ACHIEVEMENT IN READING COMPREHENSION

Variable	R	R ²	Increment in R ²	F	p
Word Knowledge	.5317	.2827	.2827	613.68	.53
Home Background	.5617	.4155	.0328	74.63	.30
Facilities for Learning	.5728	.3280	.0125	28.94	.25
Gender	.5810	.3376	.0095	22.31	.07
Time Watch TV	.5821	.3389	.0013	3.13	.06
Educational Environment	.5831	.3400	.0011	2.53	.21
Age	.5841	.3412	.0012	2.83	-.04
Similar Language	.5842	.3413	.0001	-	-.05

** $p < .01$

Table 23.13(b)

CONTRIBUTION OF PUPIL-RELATED VARIABLES
TO ACHIEVEMENT IN ARITHMETIC

Variable	R	R ²	Increment in R ²	F	p
Word Knowledge	.4303	.1851	.1851	353.72	.43
Facilities for Learning	.4550	.2071	.0219	43.06	.22
Gender	.4648	.2161	.0090	17.83	.07
Home Background	.4731	.2238	.0078	15.59	.22
Educational Environment	.4751	.2257	.0019	3.79	.19
Similar Language	.4760	.2266	.0008	1.68	-.07
Time Watch TV	.4765	.2270	.0004	0.89	.06
Age	.4766	.2272	.0002	-	-.07

** $p < .01$

As in most other States, the differences in pupils' achievement were most closely correlated with scores on test of Word Knowledge which were taken as a substitute for a measure of intelligence. More than 80% of the explained variance for either of the criterion variable was contributed by Word Knowledge. It made sense, in general. Pupil ability was likely to vary more in comparison to other variables, the range for which could get restricted more easily because of the influence of interaction of other variables.

Two out of the three composite variables, related to socio-educational background and the concern of the family regarding the achievement of children, contributed significantly towards increment in R^2 in relation to both the criterion variables, 'Educational Environment' at Home also made some contribution but the same was not statistically significant. In the Capital, family background as a whole turned out to be more influential than in any other State.

Although the apparent difference in the achievement of boys and girls was not very large -- it was 3 scores in favour of girls -- after individual ability and 'Facilities for Learning', it made a significant contribution to R^2 . It is in line with the general observation

Age seemed to have no influence on achievement but the time spent on watching TV had a reasonably high positive 't' with achievement in Reading Comprehension.

In Tables 23.13 (a) and 23.13 (b), the impact of variables associated with the home background as well as some individual-related variables on the achievement of pupils was studied. The cumulative R^2 obtained for Reading Comprehension and Arithmetic were 34% and 23%, respectively, both the values were higher than the corresponding country medians of 27% and 18%. Greater variability in the home backgrounds of children in the metropolis was expected. It was also hypothesised that the differences explained by home-related variables would be lesser for arithmetic than for the language competency as the former was learnt more specifically at school while the latter was continuously supported by the environment in and around the home. In Delhi, it turned out to be so.

A similar exercise studying the influence of school-related variables was also undertaken in which information available about the background and experience of the headmasters along with the policies and practices being followed in schools were regressed against achievement on the two criterion variables. Teacher-related variables were not entered in the analysis.

The range of school means was approximately 80% as large as that of scores of the pupils. The standard deviation of the distribution of 74 means in arithmetic was 6.3 scores compared to the 7.8 of the distribution of more than 1,500 pupils of Class IV from those schools. There could be genuine differences among schools in the large urban area covered in this study. Several localities in Delhi have clusters of people by occupation and socio-economic status, creating systematic differences in the clientele the different schools serve. The physical facilities and the kind of teachers that would get posted there can also get affected.

All the 31 variables on which information was available were used in the regression analysis but in the tables given above only those which made a statistically significant contribution to R^2 and a few more down the line were retained. The total R^2 for Reading Comprehension and Arithmetic were 51% and 41.5%, respectively -- high as compared to the respective country medians of 26% and 30%.

Table 23.14(a)

CONTRIBUTION OF SCHOOL-RELATED VARIABLES TO ACHIEVEMENT IN READING COMPREHENSION

Variable	R	R ²	Increment in R ²	t	p
Professional Training of the Headmaster	.4916	.1557	.1557	13.28*	<.40
Proportion SC/ST	.4817	.2421	.0764	7.06	<.39
Boys/Girls/Co-ed	.5281	.2792	.0471	4.57	.05
Facilities for Pupils	.5605	.3112	.0450	3.52	.26
Special Projects	.6020	.3621	.0482	5.13	.24
No-Detention Policy	.6152	.3785	.0162	1.74	.18

* $p < .05$, ** $p < .01$

Table 23.14(b)

CONTRIBUTION OF SCHOOL-RELATED VARIABLES TO ACHIEVEMENT IN ARITHMETIC

Variable	R	R ²	Increment in R ²	t	p
Special Projects	.3760	.1111	.1111	11.86*	<.38
Proportion SC/ST	.5010	.2510	.1096	10.49*	<.42
No Detention Policy	.5401	.2810	.0299	2.92	.13
Teaching Experience	.5393	.2909	.0099	.96	.02
Years of Existence	.5594	.3130	.0221	2.19	<.18
Professional Training of Headmaster	.5795	.3458	.0229	2.30	<.27
Rooms per Class Group	.5891	.3471	.0116	1.17	<.15
Boys/Girls/Co-ed	.5985	.3582	.0108	1.10	.09

** $p < .01$

Keeping the consistency in contribution of significant R^2 for both the variables, 'Proportion of SC/ST' pupils and participation in 'Special projects' were found to be the two most important variables contributing to differences in the average achievement of the schools. Twenty-two per cent of children in Delhi schools belonged to the Scheduled Castes, their average score was found to be much lower than the 71% belonging to the 'Others' group. The small ST group with its large mean could not wipe out less than 2% of this difference. Unequal distribution of SC students in the schools could cause differences in school means.

Participation in 'Special Projects' had positive correlations. The schools that take part in special projects get the advantage of extra material, orientation of teachers and interaction with experts in the field. It could also create a sense of pride in the minds of the teachers and pupils leading to better motivation for achievement.

'Professional Training' of the Headmaster made the most significant contribution to R^2 for Reading Comprehension, the negative direction of the relationship, though perplexing, stood confirmed in Table 23.14 (b).

Schools meant for boys or girls or those which admitted both the groups had a tendency towards differences in achievement favouring the co-educational schools. Generally, the single-sex schools in Delhi would be shift schools, i.e., the same building being used for housing two schools -- one during the morning hours and the other in the afternoon. The system could affect the functioning of the school in two ways. To be able to accommodate two schools in one building, the working hours are reduced. In either shift, the young children have to come or leave the school at a very early or late hour, as the case may be. Both the home-and school-related variables seemed to play significant roles in determining the achievements of pupils in Delhi. In spite of large variability in the socio-economic and educational background of the people in general, the schools seemed to play a significant role. The two would also overlap because of the clustering of similar socio-economic groups in the city. Going by the type of clientele a school was serving, differences could accrue among the teachers working in different schools, with the more experienced teachers seeking postings in localities serving groups placed higher in socio-economic hierarchy.

INTER CORRELATIONS OF Pupil-Related Variables and Achievement

[illegible]

Table 23-B
INTER CORRELATIONS OF SCHOOL-RELATED VARIABLES AND ACHIEVEMENT

1	100	03	34	-06	12	-42	-52	-07	33	-09	-05	-04	34	24	01	-03	01	04	-14	-22	-20	-22	-14	12	-19	-11	31	30	07	38	-18	-27	-36	-42	-50	-50	-45	-38	-40
2		100	63	48	-34	-18	-08	-20	38	47	-04	-05	38	30	12	10	11	-15	-06	-04	10	-08	-11	02	-28	-13	34	28	-10	47	-06	-13	-08	13	-06	-23	-20	10	-10
3			100	38	-24	-17	-35	-18	47	42	-10	60	30	31	05	-13	-08	-13	-17	-27	-18	-22	-12	19	-46	-20	25	21	20	52	10	-02	-08	-24	-03	-27	-19	-20	-13
4				100	-27	06	-12	16	21	37	03	10	19	18	14	-13	-15	12	04	-13	-02	-13	09	19	-14	-16	12	08	-25	27	07	-05	-05	-11	07	-11	-03	01	-07
5					100	-08	05	-25	-04	-21	02	-04	-04	-19	14	-13	-15	-12	-04	-13	-02	-13	10	19	-14	-16	12	08	-25	27	07	-05	-05	-11	07	-11	-03	01	-07
6						100	31	04	-18	-07	05	-10	-32	-18	-03	14	-15	08	13	14	06	13	18	-16	03	07	-06	-01	-02	-15	05	16	11	23	18	34	30	14	15
7							100	-04	-27	22	-09	-26	-27	-17	-18	17	06	-01	20	29	07	04	02	-28	14	21	-25	22	-05	-31	-10	09	01	17	22	27	17	11	05
8								100	-19	-13	07	-02	-19	-18	-05	14	20	17	-09	10	13	13	18	00	10	01	-07	-06	-20	11	-10	11	16	14	05	15	12	13	16
9									100	19	-09	-07	28	18	04	-16	-11	-11	-08	-14	-04	-20	-15	-00	03	16	25	25	04	91	08	-06	-11	22	-20	-29	-22	-16	-15
10										100	-03	-13	22	18	12	18	17	-13	07	-01	21	-07	08	11	-24	-12	08	04	04	-24	-07	-18	-17	-13	06	-14	-12	-18	-17
11											100	01	-04	-12	06	-14	02	-13	20	02	-10	12	-12	09	01	-03	-01	-02	-01	-07	-00	-07	-09	-03	02	03	-05	-04	-07
12												100	-11	-02	07	-15	-23	13	-11	-20	25	12	-11	32	07	-13	-05	-12	-03	-01	27	09	-14	-10	-19	08	13	19	14
13													100	23	20	03	-01	-13	-10	-20	-05	-16	01	28	-17	-21	17	17	08	31	03	-32	-36	-42	-31	-51	-42	-38	-39
14														100	06	-03	05	-14	-06	-09	02	-08	07	09	-14	-34	10	10	-06	24	-20	-22	-21	23	-14	-29	-30	-26	-23
15															100	-23	-12	07	03	-11	08	04	12	-04	02	18	05	06	-14	06	-06	-13	-15	-05	07	-10	-18	-10	-13
16																100	38	08	-01	17	23	-06	06	-05	04	23	-06	06	-05	04	-11	20	21	-09	-19	00	02	-04	-03
17																	100	05	18	24	13	24	05	-10	01	-06	15	15	-05	-07	-06	15	-02	07	-03	-26	-04	01	01
18																		100	05	16	07	02	21	-06	03	27	-19	-19	-27	14	-15	07	11	06	100	-12	15	22	10
19																			100	42	-13	13	04	-08	10	11	-01	-01	07	-11	-09	02	12	15	19	23	10	07	13
20																				100	09	21	16	-25	07	16	-17	-16	-04	-16	-28	07	19	39	13	33	14	02	26
21																					100	47	19	21	-10	-07	-04	-05	-14	-39	-14	-03	05	14	40	13	04	04	08
22																						100	09	10	16	-04	05	05	00	14	05	15	13	15	14	21	19	14	14
23																							100	-26	19	10	-21	-18	07	-24	-01	13	16	20	18	20	21	17	18
24																								100	-19	-28	03	-03	04	06	17	-08	-09	-33	03	-31	-17	-14	-16
25																									100	03	-11	-10	-12	-44	03	07	07	14	14	20	23	23	10
26																										100	-16	-12	-02	-09	-00	13	15	18	13	25	18	23	17
27																											100	97	18	20	-14	-12	-10	-13	-20	-09	-11	-02	-12
28																												100	20	19	-12	-09	-09	-11	-20	-05	-09	-01	-10
29																													100	13	31	13	09	01	-01	06	04	-01	07
30																														100	09	-10	-05	-19	-23	-24	-15	-14	09
31																															100	38	29	09	21	20	37	34	24
32																																100	71	58	60	62	69	67	70
33																																	100	80	71	80	78	80	98
34																																		100	61	82	74	67	89
35																																			100	70	70	78	78
36																																				100	80	76	84
37																																					100	84	80
38																																						100	79
39																																						100	79
																																						100	

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Appendices

<i>Table No</i>			
A-1	Statistics used for Determining Number of Schools and Pupils	D-5	Percentage Frequency Scores Achieved by Pupils—Appropriate Word
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C-3	Percentage Distribution of Father's Education	F-1	Tests of Arithmetic—Hindi Version
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C-5	Percentage Distribution of Teachers by Location and Gender	F-3	Tests of Language (Hindi)—Word Knowledge and Appropriate Word
C-6	General Education of Teachers (In Percentage)	F-4	Tests of Language (Hindi)—Sentence Structure and Spellings
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D-1	Percentage Frequency Scores Achieved by Pupils—Arithmetic	F-6	Teacher Questionnaire—Hindi Version
D-2	Percentage Frequency Scores Achieved by Pupils—Reading Comprehension (Para)	F-7	School Questionnaire—Hindi Version
D-3	Percentage Frequency Scores Achieved by Pupils—Reading Comprehension (Sentences)	F-8	Student Questionnaire—English Version
D-4	Percentage Frequency Scores Achieved by Pupils—Word Knowledge	F-9	Teacher Questionnaire—English Version
		F-10	School Questionnaire—English Version

Table A-1

STATISTICS USED FOR DETERMINING NUMBER OF SCHOOLS AND PUPILS

State	Total Enrolment* Class IV	Enrolment* in rural area (Class IV)	Average Enrolment per School in		Percentage of Enrolment in Rural Area	Sample Size in		No. of Schools in	
			Rural	Urban		Rural	Urban	Rural	Urban
1 Andhra Pradesh	10 00 082	812,422	18	33	81	5 730	1,343	318	45
2 Arunachal Pradesh	11,773	10,485	9	40	89	74	9	8	1
3 Assam	3,49,352	307,359	12	26	88	2,174	297	181	11
4 Bihar	11,14 573	971,305	17	32	87	6 857	1 025	403	34
5 Goa	29 764	23,240	21	49	78	164	46	8	2
6 Gujarat	8 09,142	527 057	22	70	65	3 719	2,003	169	67
7 Haryana	2 84 584	237 560	34	53	83	8 770	242	59	8
8 Himachal Pradesh	1,20,101	110 535	16	39	92	781	68	49	3
9 Jammu & Kashmir	1 12,001	89 092	10	20	79	625	167	62	9
10 Karnataka	8,30,882	548 960	17	53	65	3,819	2 057	224	69
11 Kerala	5,85,527	5 13 067	60	73	88	3 644	497	121	17
12 Madhya Pradesh	12,64,742	9 43 632	16	43	75	6 708	2,236	419	75
13 Maharashtra	15,34,820	9,43,060	20	22	61	6 621	4 233	331	141
14 Manipur	30,598	22 268	8	49	69	119	4	19	3
15 Meghalaya	30 668	24,803	-	31	81	176	41	25	2
16 Mizoram	14,376	10,244	13	22	71	22	30	6	1
17 Nagaland	18 260	15,242	13	30	83	107	22	8	1
18 Orissa	5,23,644	4 50,876	13	35	86	3 185	518	245	17
19 Punjab	3,54,109	2,85,950	24	49	81	2,028	476	84	16
20 Rajasthan	5,76,512	4,10 675	13	34	71	2 895	1 182	222	39
21 Sikkim	8,270	7,535	12	82	91	53	5	4	1
22 Tamil Nadu	24,21,347	10,18 365	34	80	72	7 132	2,213	238	97
23 Tripura	58 205	52 090	21	61	89	367	45	1	2
24 Uttar Pradesh	19 35,605	16,00,754	24	34	83	11 361	2 327	17	76
25 West Bengal	9,73,622	7,31,295	18	41	75	5 16 1	1 721	28	57
26 Delhi	1 47,560	17 022	50	69	12	125	919	1	31
Total	1,41,40,119							3981	825

* Figures are taken from The Fifth All India Educational Survey: A Concise Report, (NCERT, 1989)

Table A-2

ALLOCATION OF SCHOOLS AND PUPILS

Sl No.	State	Sample Size		Average Enrolment per School		Sample Size According to Location		No. of Schools to be Sampled	
		Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
1.	Andhra Pradesh	6,200	18	33	4 860	1 140	270	46	
2	Arunachal Pradesh	1,000	9	40	892	110	99	5	
3	Assam	2 470	12	26	2 874	297	181	12	
4	Bihar	6 500	17	32	5 655	845	333	34	
5	Goa	1 500	21	49	1 170	330	56	13	
6	Gujarat	5 720	22	70	3 718	2,002	169	80	
7	Haryana	2,010	34	53	1 770	240	71	10	
8	Himachal Pradesh	2,000	16	39	1 840	160	115	7	
9	Jammu	2,000	10	20	1,580	420	158	21	
10.	Karnataka	5,870	17	53	3 815	2 055	224	82	
11	Kerala	4,140	60	73	3 643	497	146	20	
12	Madhya Pradesh	7 000	16	43	5 250	1,750	328	70	
13	Maharashtra	8,000	20	72	4,880	3 120	244	125	
14	Manipur	1,500	8	19	1,035	465	130	25	
15	Meghalaya	1 500	7	31	1 215	285	164	11	
16	Mizoram	1 000	13	22	710	290	55	13	
17	Nagaland	1,000	13	30	830	170	64	7	
18	Orissa	3,700	13	35	3 182	518	245	20	
19	Punjab	2,500	24	49	2 025	475	84	19	
20	Rajasthan	4 080	13	34	2 895	1 185	222	48	
21	Sikkim	1,000	12	82	910	90	76	4	
22	Tamil Nadu	8 000	34	80	5,680	2,320	227	73	
23	Tripura	1,500	21	61	1 335	165	64	7	
24	Uttar Pradesh	10,000	24	34	8 300	1 700	354	68	
25	West Bengal	6 880	18	31	5 160	1 720	287	69	
26	Delhi	2,00	50	69	240	1,760	10	75	
Total		98,870			75,464	24,109	4576		1066

Table B-1

DIFFICULTY VALUES OF ITEMS — ARITHMETIC

Scores		0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	Median
1	Andhra Pradesh	-	1	1	3	4	12	10	7	2		58.7
2	Arunachal Pradesh	-	3	8	13	10	1	1	3	1	-	36.5
3	Assam	-	2	9	5	12	3	4	3 ^a	2	-	42.8
4	Bihar	-	-	-	2	-	5	10	16	7	-	71.4
5	Gujarat	-	2	4	5	9	9	6	4	1	-	49.5
6	Haryana	-	-	4	9	10	9	5	2	1	-	46.5
7	Jammu	-	-	4	12	9	9	5	1	-	-	43.9
8	Karnataka	-	14	13	6	2	3	2	-	-	-	24.1
9	Kerala	-	3	13	9	10	4	-	1	-	-	33.9
10	Madhya Pradesh	-	7	12	9	8	2	2	-	-	-	30.6
11	Maharashtra	-	4	10	11	6	6	1	2	-	-	35.0
12	Meghalaya	1	3	2	4	6	13	8	3	-	-	52.6
13	Mizoram	-	-	5	9	6	5	7	6	1	1	49.5
14	Nagaland	-	5	9	15	5	3	1	1	1	-	33.5
15	Orissa	-	1	9	13	7	2	4	2	2	-	37.2
16	Punjab	-	2	2	3	13	5	6	6	3	-	49.5
17	Rajasthan	-	-	2	9	12	9	7	1	-	-	47.0
18	Sikkim	5	1	11	8	6	3	3	2	1	-	33.2
19	Tamil Nadu	-	-	7	18	8	2	2	2	1	-	36.7
20	Tripura	-	10	15	6	4	4	1	-	-	-	26.2
21	Uttar Pradesh	-	1	3	8	13	10	5	-	-	-	45.7
22	West Bengal	-	1	10	11	7	5	3	3	-	-	37.7
23	Delhi	-	4	12	12	6	3	2	1	-	-	32.8

Table B-2

DIFFICULTY VALUES OF ITEMS — READING COMPREHENSION (PI)

Scores		0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	Median
1	Andhra Pradesh	-	2	2	7	3	7	18	5	-	60.1
2	Arunachal Pradesh	-	1	7	17	9	10	-	-	-	37.7
3	Assam	-	1	4	7	9	10	7	6	-	50.5
4	Bihar	1	-	1	-	3	3	8	21	7	72.4
5	Gujarat	1	1	-	5	7	11	13	6	-	56.8
6	Haryana	-	1	1	3	16	16	7	-	-	50.1
7	Jammu	-	1	4	9	22	8	-	-	-	43.1
8	Karnataka	-	8	14	15	4	3	-	-	-	29.5
9	Kerala	-	1	8	7	9	11	8	-	-	46.2
10	Madhya Pradesh	1	7	10	14	10	2	-	-	-	32.4
11	Maharashtra	-	3	4	5	16	10	6	-	-	45.7
12	Meghalaya	-	5	5	7	8	2	10	5	2	45.7
13	Mizoram	1	0	2	5	6	5	14	9	2	61.6
14	Nagaland	-	1	17	11	14	1	-	-	-	33.1
15	Orissa	-	2	7	12	10	7	5	1	-	40.5
16	Punjab	-	2	2	6	11	13	8	2	-	50.3
17	Rajasthan	-	2	-	3	17	15	7	-	-	49.5
18	Sikkim	-	-	4	9	10	7	10	4	-	48.5
19	Tamil Nadu	-	2	9	11	12	8	2	-	-	39.5
20	Tripura	-	5	17	12	8	2	-	-	-	29.5
21	Uttar Pradesh	-	1	2	3	12	21	5	-	-	51.4
22	West Bengal	-	3	11	7	12	7	2	2	-	40.3
23	Delhi	1	1	3	13	14	9	3	-	-	42.4

Table B-3

DIFFICULTY VALUES OF ITEMS - READING COMPREHENSION (S)

Scores	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	Median
1 Andhra Pradesh	1	5	-	2	1	4	1	2	-	39.5
2 Arunachal Pradesh	-	2	4	5	3	2	-	-	-	33.5
3 Assam	1	-	-	3	4	7	-	1	-	49.5
4 Bihar	-	-	-	1	-	-	2	10	3	74.5
5 Gujarat	-	1	1	1	2	3	7	1	-	59.5
6 Haryana	-	-	-	-	7	7	1	1	-	50.9
7 Jammu	-	-	-	2	8	4	1	1	-	47.0
8 Karnataka	-	4	8	3	-	1	-	-	-	24.5
9 Kerala	-	1	4	7	-	3	-	1	-	33.8
10 Madhya Pradesh	-	-	2	7	7	-	-	-	-	38.1
11 Maharashtra	-	1	2	5	4	3	-	1	-	39.5
12 Meghalaya	-	1	2	-	2	3	4	3	1	59.5
13 Mizoram	-	2	1	1	3	4	2	2	1	52.0
14 Nagaland	-	3	4	6	1	2	-	-	-	31.2
15 Orissa	-	1	3	2	6	2	1	1	-	46.2
16 Punjab	1	1	-	-	3	7	3	1	-	53.8
17 Rajasthan	-	-	-	1	3	9	2	1	-	53.9
18 Sikkim	-	-	6	2	5	3	-	-	-	39.5
19. Tamil Nadu	-	1	3	4	7	-	1	-	-	39.5
20 Tripura	-	3	4	7	1	1	-	-	-	30.9
21 Uttar Pradesh	-	-	-	-	5	8	3	-	-	53.2
22 West Bengal	1	1	1	6	4	2	1	-	-	37.8
23 Delhi	-	-	2	4	5	4	-	1	-	43.5

Table B-4

DIFFICULTY VALUE OF ITEMS — WORD KNOWLEDGE

Scores	0-9 10-19 20-29 30-39 40-49 50-59 60-69 70-79 80-89 90-99 Median										
	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	Median
1 Andhra Pradesh	-	-	-	-	17	22	1	-	-	-	50.9
2 Arunachal Pradesh	-	-	-	19	18	3	-	-	-	-	40.1
3 Assam	-	-	-	1	8	1	8	2	-	-	54.7
4 Bihar	-	-	-	-	-	-	15	19	6	-	72.1
5 Gujarat	-	-	-	-	11	19	7	3	-	-	54.2
6 Haryana	-	-	-	2	22	12	3	1	-	-	47.7
7 Jammu	-	-	-	16	20	3	1	-	-	-	42.0
8 Karnataka	-	-	4	25	9	1	1	-	-	-	35.9
9 Kerala	-	-	1	16	22	1	-	-	-	-	40.9
10 Madhya Pradesh	-	-	3	11	10	10	6	-	-	-	45.5
11 Maharashtra	-	-	1	2	21	14	2	-	-	-	47.6
12 Meghalaya	-	-	2	5	19	10	2	2	-	-	46.3
13 Mizoram	1	-	-	1	6	6	13	8	4	1	64.1
14 Nagaland	-	-	5	27	7	1	-	-	-	-	35.0
15 Orissa	-	-	-	-	12	23	3	2	-	-	53.0
16 Punjab	-	-	-	-	11	18	8	3	-	-	54.5
17 Rajasthan	-	-	-	-	16	17	6	1	-	-	51.9
18 Sikkim	-	-	-	-	11	21	-	1	-	-	53.8
19 Tamil Nadu	-	-	-	6	17	15	2	-	-	-	47.2
20 Tripura	-	-	-	11	20	-	2	-	-	-	44.0
21 Uttar Pradesh	-	-	-	-	14	19	6	1	-	-	52.7
22 West Bengal	-	-	4	19	13	3	1	-	-	-	37.9
23 Delhi	-	-	-	8	19	19	3	-	-	-	45.6

Table B-5

DIFFICULTY VALUES OF ITEMS—APPROPRIATE WORD

Scores		0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	Median
1	Andhra Pradesh	-	1	3	2	5	7	3	2	1	50.9
2	Arunachal Pradesh	-	5	5	3	7	2	2	-	-	36.2
3	Assam	1	2	4	8	6	2	1	-	-	35.7
4	Bihar	-	-	-	4	3	1	4	9	3	69.5
5	Gujarat	1	-	2	4	3	7	7	-	-	52.5
6	Haryana	-	-	1	3	7	8	5	-	-	50.7
7	Jammu	-	-	2	9	7	6	-	-	-	41.2
8	Karnataka	1	4	13	5	-	1	-	-	-	24.9
9	Kerala	-	2	5	4	9	4	-	-	-	40.6
10	Madhya Pradesh	-	2	6	8	6	2	-	-	-	34.5
11	Maharashtra	-	2	3	4	8	6	1	-	-	43.2
12	Meghalaya	-	1	6	3	5	7	2	-	-	43.5
13	Mizoram	-	-	1	1	3	3	9	4	3	63.9
14	Nagaland	-	3	12	4	4	1	-	-	-	27.0
15	Orissa	-	3	3	6	2	8	1	-	1	39.5
16	Punjab	-	1	1	5	4	5	5	3	-	51.5
17	Rajasthan	-	-	2	3	7	8	3	1	-	49.5
18	Sikkim	1	5	8	3	5	1	1	-	-	27.0
19	Tamil Nadu	-	2	7	9	3	2	1	-	-	32.8
20	Tripura	-	3	6	11	3	1	-	-	-	32.2
21	Uttar Pradesh	-	-	2	3	6	10	3	-	-	50.5
22	West Bengal	-	1	-	2	6	10	4	1	-	52.5
23	Delhi	-	1	2	4	7	4	6	-	-	46.6

Table B-6

DIFFICULTY VALUES OF ITEMS — SENTENCE STRUCTURE

Scores		0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	Median
1	Andhra Pradesh	-	-	1	1	2	4	5	4	1	-	61.5
2	Arunachal Pradesh	-	-	-	3	5	9	1	-	-	-	50.6
3	Assam	-	-	-	-	2	1	12	2	1	-	64.0
4	Bihar	-	-	-	-	-	-	-	14	4	-	75.9
5	Gujarat	-	-	-	-	-	1	5	12	-	-	72.0
6	Haryana	-	-	-	-	2	10	6	-	-	-	56.5
7	Jammu	-	-	-	4	11	3	-	-	-	-	44.0
8	Karnataka	-	-	2	10	6	-	-	-	-	-	36.5
9	Kerala	-	-	-	1	7	7	3	-	-	-	50.9 *
10	Madhya Pradesh	-	-	-	7	5	6	-	-	-	-	43.5
11	Maharashtra	-	-	-	-	2	2	10	4	-	-	64.5
12	Meghalaya	-	-	-	-	-	3	1	5	-	9	
13	Mizoram	-	-	1	2	2	2	1	6	4	-	71.2
14	Nagaland											Test Not Used
15	Orissa	-	-	1	2	5	5	3	2	-	-	51.5
16	Punjab	-	-	-	1	2	-	10	5	-	-	65.5
17	Rajasthan	-	-	-	-	4	12	1	1	-	-	53.4
18	Sikkim	-	-	2	1	9	3	2	1	-	-	46.2
19	Tamil Nadu	-	-	-	-	3	8	5	2	-	-	57.0
20	Tripura	2	1	6	1	3	1	3	1	-	-	29.5
21	Uttar Pradesh	-	-	-	-	-	6	11	1	-	-	62.2
22	West Bengal	-	-	-	-	3	8	5	2	-	-	57.0
23	Delhi	-	-	-	1	8	6	3	-	-	-	49.5

NB The test is not common

Table B-7

DIFFICULTY VALUES OF ITEMS — SPELLING

Scores	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	Median
1 Andhra Pradesh	-	1	3	2	12	7	-	-	-	54.9
2 Arunachal Pradesh	-	3	8	9	3	2	-	-	-	41.2
3 Assam	-	3	4	7	3	5	3	-	-	47.4
4 Bihar	-	1	1	-	3	5	14	1	-	71.3
5 Gujarat	-	2	1	6	10	6	-	-	-	53.0
6 Haryana	-	3	6	8	7	1	-	-	-	43.9
7 Jammu	4	5	11	3	2	-	-	-	-	32.7
8 Karnataka	3	4	8	7	3	-	-	-	-	36.4
9 Kerala	-	2	6	12	5	-	-	-	-	43.2
10 Madhya Pradesh	1	6	9	6	2	1	-	-	-	35.6
11 Maharashtra	1	2	9	4	4	5	-	-	-	40.7
12 Meghalaya	-	3	4	5	2	6	2	2	1	52.0
13 Mizoram	1	5	4	4	7	3	1	-	-	45.7
14 Nagaland										Test Not Used
15 Orissa	-	4	10	8	1	2	-	-	-	38.0
16 Punjab	-	1	1	2	10	10	1	-	-	58.0
17 Rajasthan	-	7	7	7	3	1	-	-	-	37.1
18 Sikkim		5	7	7	6	-	-	-	-	40.2
19 Tamil Nadu	1	1	3	7	4	-	2	-	-	50.7
20 Tripura	5	7	6	5	2			-	-	30.3
21 Uttar Pradesh	-	4	2	13	4	2	-	-	-	44.5
22 West Bengal	1	5	9	1	3	3	-	-	-	36.7
23 Delhi	2	2	6	9	3	3	-	-	-	42.3

NB The test is not common

Table B-8

DISCRIMINATION INDICES—MEDIAN VALUES

	State	Aritb	R C (P)	R C (S)	W K	A W	S S.	Spellings
1	Andhra Pradesh	58.1	59.5	59.5	93.6	99.5	63.0	76.4
2	Arunachal Pradesh	39.5	50.5	51.5	55.1	41.2	63.5	60.1
3	Assam	55.7	59.5	71.6	54.3	54.0	64.0	63.0
4.	Bihar	60.1	55.9	66.2	65.1	52.5	60.5	60.3
5	Gujarat	58.4	60.8	72.5	62.7	54.0	53.0	72.7
6	Haryana	62.8	62.6	77.3	68.8	63.1	75.2	77.0
7	Jammu	52.4	60.2	71.7	71.0	59.5	73.5	65.3
8	Karnataka	38.0	42.8	51.2	68.5	42.8	59.5	77.8
9.	Kerala	35.9	51.2	43.5	49.5	38.3	66.2	61.3
10	Madhya Pradesh	45.3	52.2	67.8	52.6	52.8	61.5	66.4
11	Maharashtra	50.7	56.5	69.5	63.0	45.7	71.3	65.7
12	Meghalaya	71.5	54.5	57.2	48.6	69.5	34.5	58.5
13	Mizoram	45.0	47.5	50.9	34.5	49.5	45.2	43.9
14.	Nagaland	34.0	29.5	36.2	54.5	39.5	-	-
15	Orissa	43.6	45.9	56.2	44.5	42.0	59.5	50.6
16	Punjab	57.0	62.5	77.5	62.0	59.5	62.0	74.5
17.	Rajasthan	54.5	60.9	74.5	65.0	63.2	70.5	75.3
18	Sikkim	19.5	55.7	69.5	34.9	36.2	49.5	53.7
19.	Tamil Nadu	52.5	52.5	57.8	50.2	43.0	68.1	64.5
20	Tripura	31.0	32.8	41.2	39.5	37.0	37.5	30.3
21	Uttar Pradesh	68.5	70.9	89.5	73.1	69.5	75.5	78.6
22.	West Bengal	48.7	50.7	90.6	63.6	64.5	65.7	67.4
23	Delhi	49.5	55.5	69.5	61.5	59.5	66.5	79.9

Table C-1

DISTRIBUTION OF THE SAMPLE OVER GENDER LOCATION AND CASTE (IN PERCENTAGE)

State	Gender			Location			Caste				
	N	B	G	U	R	SC	ST	BC	O		
1 Andhra Pradesh	4691	59	41	39	61	17	7	47	29		
2. Arunachal Pradesh	935	53	47	18	82	2	74	3	21		
3 Assam	1973	54	46	17	83	12	10	11	67		
4 Bihar	3372	67	33	10	90	13	12	47	28		
5. Gujarat	4598	57	43	43	57	16	25	9	51		
6 Haryana	1728	57	43	24	76	24	2	14	59		
7 Jammu	807	57	43	14	86	33	7	8	52		
8. Karnataka	4874	56	44	32	68	15	5	28	52		
9. Kerala	3600	51	49	16	84	7	1	64	26		
10 Madhya Pradesh	2951	53	47	25	75	14	18	44	25		
11 Maharashtra	7756	52	48	46	54	13	11	21	55		
12. Meghalaya	511	58	42	8	92	7	91	1	2		
13. Mizoram	926	51	49	41	59	4	92	3	1		
14 Nagaland	916	49	51	51	49	12	82	2	3		
15. Orissa	2996	61	39	25	75	21	19	5	55		
16 Punjab	1949	52	48	26	74	39	1	11	49		
17. Rajasthan	2251	73	27	36	64	13	14	3	70		
18 Sikkim	1085	59	41	39	61	3	18	2	79		
19 Tamil Nadu	5277	52	48	27	73	23	2	71	4		
20 Tripura	1054	55	45	15	85	19	30	2	49		
21 Uttar Pradesh	4831	69	31	27	73	22	3	37	38		
22 West Bengal	5211	57	43	20	80	33	3	3	62		
23 Delhi	1559	44	56	79	21	22	2	5	71		
All India	65851	57	43	31	69	15	13	27	42		

Table C-2

PERCENTAGE DISTRIBUTION OF FATHER'S OCCUPATION

State	Professionals	Senior Officers	Business	Farmers	Junior Officers	Skilled Workers	Unskilled Workers	Other
1. Andhra Pradesh	3.6	1.6	6.5	40.7	8.1	12.3	23.8	3.1
2. Arunachal Pradesh	5.0	7.8	5.3	59.5	7.4	7.7	5.3	1.9
3. Assam	8.4	4.7	11.8	49.0	5.8	8.0	6.2	6.0
4. Bihar	5.8	1.7	6.1	59.6	4.8	5.3	11.8	4.8
5. Gujarat	8.6	5.7	11.7	48.4	8.7	8.9	4.5	3.6
6. Haryana	2.2	3.1	8.0	38.5	17.7	12.4	15.4	2.8
7. Jammu	4.8	6.2	6.3	58.7	5.7	3.7	11.6	3.0
8. Karnataka	7.1	2.3	8.0	36.0	7.0	10.9	19.0	9.5
9. Kerala	4.7	2.2	10.7	17.6	5.8	9.2	33.8	16.1
10. Madhya Pradesh	3.3	0.4	10.4	50.0	8.5	14.9	7.1	4.9
11. Maharashtra	5.1	3.6	6.9	25.2	17.1	20.6	16.9	4.6
12. Meghalaya	0.8	1.8	33.7	45.6	7.8	4.3	5.3	0.7
13. Mizoram	6.8	3.8	5.7	31.8	13.7	16.6	8.1	13.7
14. Nagaland	11.4	15.9	4.1	23.8	9.4	12.0	11.2	12.1
15. Orissa	9.6	3.3	7.8	41.1	15.0	12.6	7.0	3.6
16. Punjab	2.5	1.7	6.8	33.2	5.9	14.4	32.5	2.9
17. Rajasthan	6.5	3.1	16.9	47.5	8.8	9.4	3.9	3.8
18. Sikkim	5.3	0.4	7.0	81.9	5.0	0.4	7.7	7.7
19. Tamil Nadu	2.2	1.2	5.9	33.0	3.6	25.0	12.4	16.8
20. Tripura	4.8	1.8	13.9	40.6	6.3	6.3	13.6	12.4
21. Uttar Pradesh	5.1	1.9	8.4	55.3	6.6	7.7	9.4	5.0
22. West Bengal	7.7	2.1	15.2	51.3	0.8	8.2	2.7	3.0
23. Delhi	4.2	4.4	20.4	2.4	11.3	35.0	11.2	11.1
Range	0.8	4	4.5	17.6	3.6	0.4	2.7	0.7
	-11.4	-15.9	-3.7	-51.4	-17.7	-25.0	-33.5	-16.8
Median	5.1	2.3	8.4	41.1	7.8	4.4	11.2	3.8

Table C-3

PERCENTAGE DISTRIBUTION OF FATHER'S EDUCATION

State	Illiterate	Primary	Below Class V	Class V	Class VII	BA	MA
1 Andhra Pradesh	37.12	34.6	13.9	6.2	2.3	4.7	0.9
2 Arunachal Pradesh	49.6	22.7	10.4	6.0	3.7	4.9	2.7
3 Assam	20.9	32.0	26.7	9.6	4.3	5.1	1.4
4 Bihar	38.4	22.9	13.2	8.4	10.1	6.1	0.8
5 Gujarat	33.9	35.8	6.4	10.8	3.6	6.8	2.7
6 Haryana	29.9	16.5	18.6	23.2	6.8	3.6	1.4
7 Jammu	45.7	19.3	16.5	13.5	2.6	1.6	0.9
8 Karnataka	27.4	36.5	10.7	12.1	6.6	5.0	1.6
9 Kerala	4.5	43.3	35.2	12.5	2.7	1.1	0.7
10 Madhya Pradesh	26.9	35.0	14.6	11.0	5.9	6.6	0.1
11 Maharashtra	14.5	28.2	16.4	26.3	5.7	7.4	1.5
12 Meghalaya	2.0	9.8	50.2	32.9	3.7	1.4	—
13 Mizoram	16.9	31.5	32.0	11.4	4.2	3.4	0.5
14 Nagaland	26.9	28.5	21.5	14.0	4.4	4.3	0.5
15 Orissa	19.7	34.7	16.1	17.0	2.4	8.4	1.6
16 Punjab	40.0	15.2	15.4	22.6	3.1	3.0	0.7
17 Rajasthan	34.2	20.3	14.2	11.7	7.3	7.7	4.5
18 Sikkim	72.8	19.5	1.1	1.0	5.5	—	12.2
19 Tamil Nadu	23.5	40.6	21.1	9.7	2.9	1.8	0.4
20 Tripura	26.1	42.0	19.9	5.0	3.0	2.8	0.9
21 Uttar Pradesh	42.6	21.9	12.9	8.9	7.6	3.9	2.3
22 West Bengal	15.6	34.8	25.4	12.6	3.9	6.3	1.5
23 Delhi	10.5	13.1	13.4	25.1	11.5	21.7	4.7

Table C-4

PERCENTAGE DISTRIBUTION OF MOTHERS' EDUCATION

State	Illiterate	Primary	Below Class X	Class X	Class XII	B.A.	M.A.
1 Andhra Pradesh	61.0	29.8	6.5	1.6	4	5	1
2 Arunachal Pradesh	71.2	13.4	6.5	4.3	1.5	2.6	5
3 Assam	39.6	30.2	20.2	5.8	1.7	2.4	2
4 Bihar	66.7	19.0	5.7	3.8	3.3	1.2	3
5 Gujarat	51.4	29.1	5.8	6.6	2.3	3.8	1.0
6 Haryana	62.3	18.9	8.8	7.2	1.5	1.0	2
7 Jammu	62.1	18.1	9.2	7.9	1.0	1.5	2
8 Karnataka	43.7	34.9	9.3	6.6	4.0	1.3	2
9 Kerala	5.0	46.3	34.2	10.5	2.4	1.3	3
10 Madhya Pradesh	67.6	28.2	2.6	5	8	3	0
11 Maharashtra	36.0	30.5	14.9	12.8	2.4	2.9	5
12 Meghalaya	21.5	23.6	36.6	15.7	2.7	0.6	2
13 Mizoram	34.8	40.7	18.3	3.8	1.5	0.6	2
14 Nagaland	22.2	29.8	19.3	5.0	2.4	0.9	3
15 Orissa	49.3	31.1	9.3	7.1	1.2	1.8	1
16 Punjab	55.0	22.9	10.2	9.5	1.0	1.2	2
17 Rajasthan	61.7	16.9	10.5	4.8	3.1	2.0	1.0
18 Sikkim	37.9	38.2	10.5	1.3	7.8	2.4	1.0
19 Tamil Nadu	48.5	32.8	12.7	4.5	1.1	3	0
20 Tripura	32.3	40.7	17.7	3.5	2.2	2.9	0.4
21 Uttar Pradesh	54.4	20.5	10.6	5.8	4.8	2.6	1.3
22 West Bengal	32.1	37.3	17.1	7.2	2.4	3.5	5
23 Delhi	39.7	22.4	11.3	9.9	6.7	8.7	1.2

Table C-5

PERCENTAGE DISTRIBUTION OF TEACHERS BY LOCATION AND GENDER

	<i>State</i>	<i>Location</i>		<i>Gender</i>	
		Urban	Rural	Male	Female
1	Andhra Pradesh	30.3	69.7	61.1	38.9
2	Arunachal Pradesh	15.5	84.5	77.7	22.3
3	Assam	23.1	76.9	64.2	35.8
4	Bihar	10.6	89.4	81.3	18.7
5	Gujarat	38.5	61.4	58.4	41.6
6	Haryana	25.5	74.5	51.5	48.5
7	Jammu	10.5	89.5	54.4	45.6
8	Karnataka	34.1	65.9	55.2	44.8
9	Kerala	15.9	84.1	56.9	53.1
10	Madhya Pradesh	21.4	78.6	71.6	28.4
11	Maharashtra	38.9	61.1	46.1	53.9
12	Meghalaya	61.5	38.5	67.9	32.1
13	Mizoram	48.4	51.6	47.0	53.0
14	Nagaland	51.1	48.9	70.9	29.1
15	Orissa	28.5	71.5	62.0	38.0
16	Punjab	26.5	73.5	35.8	64.2
17	Rajasthan	22.5	77.5	74.9	25.1
18	Sikkim	19.0	81.0	61.3	38.7
19	Tamil Nadu	24.0	76.0	55.7	44.3
20	Tripura	14.2	85.8	72.7	27.3
21	Uttar Pradesh	26.7	73.3	75.9	24.1
22	West Bengal	18.3	81.7	80.8	19.2
23	Delhi	72.8	27.2	27.2	72.8

Table C-6

GENERAL EDUCATION OF THE TEACHERS (IN PERCENTAGE)

	State	Educational Levels				
		Below	X	X	XI XII	Graduates and Above
1	Andhra Pradesh		8.2	27.9	30.4	33.4
2	Arunachal Pradesh		4.2	8.8	17.0	70.0
3	Assam	12.3		55.4	21.5	10.8
4	Bihar	2.8		31.3	39.6	26.3
5	Gujarat	9.7		33.9	34.5	17.2
6	Haryana	1.2		71.5	16.4	10.9
7	Himachal Pradesh	2.6		40.4	16.7	40.3
8	Karnataka	5.4		55.5	25.4	13.7
9	Kerala	3.9		45.4	35.7	15.0
10	Madhya Pradesh	5.0		13.0	36.8	45.2
11	Madhpradesh	7.6		65.7	12.5	14.2
12	Meghalaya	44.9		25.6	20.5	9.0
13	Mizoram	36.7		50.2	11.6	1.4
14	Nagaland	2.8		12.8	34.8	49.6
15	Orissa	17.2		45.9	13.5	23.4
16	Punjab	2.4		70.6	22.6	4.4
17	Rajasthan	1.7		16.5	26.7	52.1
18	Sikkim	4.4		36.5	5.7	4.4
19	Tamil Nadu	10.4		57.6	25.7	11.9
20	Tripura	12.5		46.3	35.5	13.6
21	Uttar Pradesh	3.4		21.9	35.4	39.3
22	West Bengal	2.3		48.9	24.4	24.1
23	Delhi	-		10.5	19.1	70.4

Table C-7

PROFESSIONAL EDUCATION OF THE TEACHERS (IN PERCENTAGE)

State	Diploma					B Ed			No Response
	One Year	Two Year	One Year	Four Year	Any Other	One Year	Four Year	Any Other	
1 Andhra Pradesh	28.1	32.8	32.6	0.6	5.9	-	-	-	-
2 Arunachal Pradesh	41.5	1.6	44.0	0.5	12.4	-	-	-	-
3 Assam	59.2	9.2	24.3	0.4	6.9	-	-	-	-
4 Bihar	7.6	88.2	1.4	-	2.7	-	-	-	-
5 Gujarat	21.1	24.0	28.2	25.8	0.9	-	-	-	-
6 Haryana	10.3	83.0	5.4	0.6	0.6	-	-	-	-
7 Jammu	68.4	2.6	18.4	0.9	5.3	4.4	-	-	-
8 Karnataka	15.2	74.4	7.5	0.2	2.6	-	-	-	-
9 Kerala	5.3	80.7	11.1	0.5	2.4	-	-	-	-
10 Madhya Pradesh	20.7	36.8	5.0	-	5.5	32.0	-	-	-
11. Maharashtra	18.5	76.0	2.6	1.3	1.6	-	-	-	-
12 Meghalaya	50.0	9.0	9.0	12.8	19.2	-	-	-	-
13 Mizoram	11.2	25.6	37.2	26.0	-	-	-	-	-
14 Nagaland	34.8	4.3	9.2	2.4	49.6	-	-	-	-
15 Orissa	4.9	54.0	13.3	3.8	9.6	15.0	-	-	-
16 Punjab	6.9	89.6	2.0	0.5	1.0	-	-	-	-
17 Rajasthan	6.2	47.6	23.4	15.1	1.7	6.0	-	-	-
18. Sikkim	52.6	8.0	6.6	1.5	31.3	-	-	-	-
19. Tamil Nadu	3.6	84.3	10.0	0.2	1.9	-	-	-	-
20 Tripura	80.1	0.6	5.1	0.6	13.6	-	-	-	-
21. Uttar Pradesh	21.5	18.8	30.7	28.9	-	-	-	-	-
22 West Bengal	3.0	16.2	36.8	44.0	-	-	-	-	-
23 Delhi	14.8	34.6	49.4	1.2	-	-	-	-	-

Table - C-8

PERCENTAGE DISTRIBUTION OF TEACHERS BY TEACHING EXPERIENCE

	Stage	Below Five Year	Five Year	11-20 Years	More than 20 Years	No Response
1.	Andhra Pradesh	34.8	17.8	19.9	27.5	-
2.	Arunachal Pradesh	35.2	26.9	18.7	19.2	-
3.	Assam	23.1	25.8	30.3	20.8	-
4.	Bihar	18.0	15.2	44.5	22.3	-
5.	Gujarat	19.4	57.5	7.5	5.9	9.6
6.	Haryana	18.2	16.4	32.1	33.3	-
7.	Jammu	23.7	8.8	32.5	35.0	-
8.	Karnataka	12.6	26.8	25.7	34.8	-
9.	Kerala	23.2	23.7	20.3	32.8	-
10.	Madhya Pradesh	25.2	32.7	21.1	20.9	-
11.	Maharashtra	20.2	21.1	21.4	34.3	-
12.	Meghalaya	46.1	24.4	11.5	18.0	-
13.	Mizoram	51.2	48.4	0.5	-	-
14.	Nagaland	47.5	27.0	11.1	6.4	-
15.	Orissa	31.6	16.6	33.1	18.8	-
16.	Punjab	25.5	4.4	42.2	27.9	-
17.	Rajasthan	42.8	26.3	16.3	14.6	-
18.	Sikkim	31.4	32.1	29.2	7.3	-
19.	Tamil Nadu	16.6	9.6	23.0	50.8	-
20.	Tripura	23.3	38.6	26.1	11.9	-
21.	Uttar Pradesh	60.0	32.8	6.7	0.5	-
22.	West Bengal	75.1	1.1	23.5	0.2	-
23.	Delhi	15.4	23.5	29.0	32.1	-

Table D-1

PERCENTAGE FREQUENCY SCORES ACHIEVED BY PUPILS — ARITHMETIC

Scores	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	Median
1 Andhra Pradesh	9	47	131	159	162	196	207	89	242
2 Arunachal Pradesh	14	140	335	283	130	74	21	2	147
3 Assam	30	119	224	210	155	147	93	22	175
4 Bihar	18	37	71	72	100	155	253	270	304
5 Gujarat	25	89	164	232	199	137	120	33	193
6 Haryana	38	116	232	154	128	147	137	48	182
7 Jammu	19	119	257	224	171	108	73	30	170
8 Karnataka	148	300	313	145	52	23	17	1	103
9 Kerala	14	205	396	215	99	46	18	7	130
10 Madhya Pradesh	106	239	348	146	23	94	38	5	117
11 Maharashtra	87	161	257	216	145	88	36	9	144
12 Meghalaya	10	145	248	110	110	98	272	8	189
13 Mizoram	1	25	170	312	211	159	87	34	195
14 Nagaland	16	165	394	272	92	56	5	-	135
15 Orissa	13	86	309	294	151	75	47	24	161
16 Punjab	27	60	118	166	187	251	155	15	224
17 Rajasthan	27	89	195	217	175	166	99	30	188
18 Sikkim	-	42	474	373	107	4	-	-	143
19 Tamil Nadu	24	160	310	208	114	88	67	29	146
20 Tripura	42	290	384	193	74	16	1	-	117
21 Uttar Pradesh	82	148	171	160	140	125	115	58	176
22 West Bengal	32	153	276	232	147	75	50	33	153
23 Delhi	83	207	296	176	109	86	33	8	129

Table D-2

PERCENTAGE FREQUENCY OF SCORES ACHIEVED BY PUPILS - READING COMPREHENSION (PARA)

States	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	Median
1 Andhra Pradesh	1.0	6.0	13.0	13.3	14.1	15.8	24.3	12.4	-	25.3
2 Arunachal Pradesh	1.6	13.5	31.4	22.5	30.8	8.9	6.1	5.1	1	15.3
3 Assam	2.4	8.8	10.5	14.8	14.1	13.7	17.3	11.4	1.0	22.1
4 Bihar	1.4	3.5	7.0	6.2	7.9	10.4	18.3	32.4	12.7	33.2
5 Gujarat	2.3	5.8	12.2	12.6	13.2	16.8	19.2	16.5	1.4	25.7
6 Haryana	2.1	8.6	19.7	15.9	13.0	9.7	13.8	10.4	6.4	20.8
7 Jammu	3.7	12.8	25.5	17.0	11.5	9.8	10.5	6.6	1.6	16.0
8 Karnataka	11.5	19.0	32.4	19.8	8.6	5.0	3.0	-	-	12.5
9 Kerala	0.1	6.1	22.8	24.8	18.6	12.9	7.8	5.7	9	18.7
10 Madhya Pradesh	5.3	28.0	27.3	17.1	11.6	1.3	6.3	3.0	-	12.6
11 Maharashtra	4.6	8.7	18.9	18.8	15.2	14.6	11.6	6.4	1.2	19.2
12 Meghalaya	1.6	5.5	14.7	26.2	19.0	9.2	19.6	3.7	-	20.0
13 Mizoram	0.2	2.0	8.2	15.1	18.2	21.7	19.4	13.3	1.8	25.9
14 Nagaland	2.7	14.1	37.6	23.7	14.5	6.1	1.5	-	-	13.9
15 Orissa	0.7	6.9	25.8	28.1	14.9	10.5	8.3	3.8	8	17.4
16 Punjab	6.3	6.2	15.6	14.3	15.6	15.2	15.4	10.0	8	21.9
17 Rajasthan	3.9	6.7	19.4	14.7	11.2	1.7	14.5	11.9	2.9	21.8
18 Sikkim	-	0.0	15.2	16.2	21.8	24.4	0	2.5	10.8	21.7
19 Tamil Nadu	2.8	11.7	31.0	20.9	12.0	0.0	7.7	4.8	0.2	15.6
20 Tripura	2.6	26.7	37.6	22.9	10.5	3.8	1.9	4	-	13.0
21 Uttar Pradesh	7.3	11.8	14.6	10.2	9.8	10.8	15.9	10.0	3.7	22.6
22 West Bengal	5.9	12.9	27.4	19.3	13.4	11.9	7.2	3.9	1	16.0
23 Delhi	4.8	16.0	23.4	16.7	10.2	13.3	9.5	5.8	3	18.0

Table D-3

PERCENTAGE FREQUENCY OF SCORES ACHIEVED BY PUPILS—READING COMPREHENSION (SENTENCES)

Scores	0-1	2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-17	Median
1 Andhra Pradesh	5.6	11.0	21.0	25.1	27.0	10.1	1	-	-	6.5
2 Arunachal Pradesh	10.4	15.6	25.0	21.8	13.6	10.5	2.3	-	-	5.4
3 Assam	10.4	8.9	13.4	14.8	15.8	14.5	17.0	7.0	1	7.9
4 Bihar	4.5	3.3	5.7	5.6	7.4	10.3	19.5	32.9	10.9	12.7
5 Gujarat	7.6	6.9	11.6	14.2	12.6	15.5	17.4	14.1	1	9.0
6 Haryana	8.2	8.7	15.6	15.0	10.9	7.6	10.4	15.7	9.9	8.0
7 Jammu	5.1	11.5	18.8	16.5	12.9	10.9	8.1	10.5	5.7	7.3
8 Karnataka	24.3	22.8	24.7	14.9	6.5	3.7	2.7	4	-	3.7
9 Kerala	5.4	12.9	25.4	26.9	18.0	7.3	3.2	8	-	6.0
10 Madhya Pradesh	17.0	12.7	19.8	12.5	16.4	4.6	7.9	7.8	1.3	5.6
11 Maharashtra	12.5	8.9	17.3	19.0	16.9	12.5	9.3	3.5	-	6.7
12 Meghalaya	1.4	3.7	13.1	17.6	20.2	19.4	14.1	10.6	-	8.9
13 Mizoram	1.4	2.8	16.5	21.7	25.3	18.8	10.3	3.1	-	8.1
14 Nagaland	6.2	23.8	32.7	20.2	9.4	3.4	3.9	3	-	4.7
15 Orissa	3.2	9.8	23.8	26.0	16.1	8.7	9.2	2.9	3	7.0
16 Punjab	9.9	8.4	11.5	10.7	14.3	14.4	19.8	11.1	-	8.8
17 Rajasthan	9.6	6.7	13.2	12.6	12.3	11.5	13.8	15.4	4.7	8.8
18 Sikkim	3.5	23.4	39.8	11.2	1.2	2.5	4.3	4.1	9.9	4.7
19 Tamil Nadu	7.6	16.7	25.8	19.7	11.7	7.1	7.5	3.6	3	5.5
20 Tripura	9.2	18.7	34.0	22.5	8.6	5.4	1.6	-	-	4.8
21 Uttar Pradesh	18.1	7.2	9.2	7.8	8.1	9.8	11.8	18.6	9.3	9.4
22 West Bengal	32.2	5.5	13.6	11.6	5.3	8.6	11.0	12.2	-	5.3
23 Delhi	12.1	9.6	15.7	17.1	13.6	13.7	9.5	7.3	1.5	7.0

Table D-4

PERCENTAGE FREQUENCY OF SCORES ACHIEVED BY PUPILS — WORD KNOWLEDGE

Scores	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40	Median
1 Andhra Pradesh	25.2	1.6	5.6	9.2	11.1	9.4	9.8	19.4	5.7	21.9
2 Arunachal Pradesh	16.6	5.3	9.5	24.5	28.5	12.4	2.7	4	-	18.3
3 Assam	3.4	4.7	8.7	16.4	27.6	18.4	11.9	8.2	6	22.5
4 Bihar	4.2	2.5	6.0	8.5	9.4	10.1	16.7	30.5	12.2	32.3
5 Gujarat	6.6	4.8	8.6	16.4	21.9	15.1	14.0	13.6	1.0	22.0
6 Haryana	9.9	8.3	10.2	18.9	17.9	13.0	10.1	10.0	1.0	20.3
7 Jammu	19.2	6.9	9.2	18.8	20.9	11.6	8.7	4.2	3	18.5
8 Karnataka	16.8	12.7	15.1	20.3	20.7	9.1	4.2	1.1	-	15.8
9 Kerala	12.3	9.4	16.3	24.5	22.9	10.3	2.9	1.2	-	16.9
10 Madhya Pradesh	11.2	4.1	10.4	17.8	30.2	14.8	4.7	0	-	20.4
11 Maharashtra	9.3	7.7	10.0	16.8	23.7	15.8	11.1	5.7	-	20.8
12 Meghalaya	2	7.6	19.6	27.0	22.5	14.3	6.1	-	-	18.7
13 Mizoram	3	5	2.1	10.1	28.3	31.6	22.1	-	-	25.8
14 Nagaland	17.4	9.2	16.3	25.0	23.9	5.6	1.0	1.0	1	16.1
15 Orissa	2.8	3.5	7.5	24.2	32.6	16.0	8.3	4.2	-	21.5
16 Punjab	5.2	5.0	10.9	15.1	20.3	15.8	14.7	11.5	1.7	22.9
17 Rajasthan	9.9	4.5	7.7	15.6	20.8	17.5	12.7	10.2	1.2	22.5
18 Sikkim	4	4	9.3	20.2	43.9	14.0	7.4	3.6	-	21.7
19 Tamil Nadu	4.3	8.2	11.5	22.1	27.6	15.3	7.5	3.3	2	20.2
20 Tripura	5.0	7.0	12.8	31.5	30.8	9.5	2.8	5	-	18.5
21 Uttar Pradesh	8.8	8.8	12.2	15.1	14.2	11.9	12.2	14.4	2.4	21.3
22 West Bengal	18.8	10.2	11.3	21.1	18.7	11.1	4.0	3.1	-	16.8
23 Delhi	10.8	7.2	9.2	20.4	25.5	14.5	8.7	3.5	1	23.0

Table D-5

PERCENTAGE FREQUENCY OF SCORES ACHIEVED BY PUPILS — APPROPRIATE WORD

Scores	0-2	3-5	6-8	9-11	12-14	15-17	18-20	21-23	24	Median
1 Andhra Pradesh	20	76	178	186	208	248	79	4	-	12.1
2 Arunachal Pradesh	26	158	319	277	141	67	12	-	-	85
3 Assam	87	208	265	151	136	120	32	1	-	78
4 Bihar	24	37	67	79	129	273	307	82	1	163
5 Gujarat	34	74	156	180	214	236	100	5	-	123
6 Haryana	45	114	163	141	150	189	167	32	-	12
7 Jammu	52	164	232	188	134	126	104	4	-	-
8 Karnataka	179	283	258	148	87	34	9	1	-	60
9 Kerala	19	147	306	272	144	69	31	11	-	88
10. Madhya Pradesh	134	214	226	143	113	66	100	3	1	75
11 Maharashtra	59	111	210	238	193	138	50	1	-	100
12 Meghalaya	33	190	250	139	94	215	78	-	-	91
13 Mizoram	7	25	71	119	189	263	239	84	2	155
14 Nagaland	65	255	367	188	93	29	2	-	-	68
15 Orissa	14	103	278	268	167	122	47	1	-	97
16 Punjab	59	81	126	158	181	225	151	18	-	127
17 Rajasthan	40	103	175	170	160	143	176	32	-	117
18 Sikkim	14	311	386	164	55	70	-	-	-	69
19 Tamil Nadu	64	177	318	236	104	70	29	2	-	79
20 Tripura	40	231	337	218	129	41	5	-	-	75
21 Uttar Pradesh	85	110	131	128	142	163	169	70	2	125
22 West Bengal	39	60	148	192	182	146	224	7	-	125
23 Delhi	56	112	173	158	173	174	127	28	1	116

Table D-6

PERCENTAGE FREQUENCY OF SCORES ACHIEVED BY PUPILS — SENTENCE STRUCTURE

Scores	0-1	2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-17	18	Median
1 Andhra Pradesh	14	42	93	102	103	133	181	197	133	-	116
2 Arunachal Pradesh	15	67	177	216	141	108	73	80	90	32	78
3 Assam	13	37	82	100	108	94	128	202	186	49	125
4 Bihar	23	24	41	40	48	63	86	136	325	213	157
5 Gujarat	20	31	63	75	60	77	111	170	259	133	142
6 Haryana	36	74	152	129	84	79	86	97	175	87	101
7 Jammu	99	109	180	155	101	77	63	78	95	43	69
8 Karnataka	96	154	206	163	108	97	81	68	24	2	60
9 Kerala	23	81	147	166	142	111	106	96	95	32	88
10 Madhya Pradesh	38	152	160	178	90	172	94	32	83	1	72
11 Maharashtra	37	44	76	83	88	99	124	160	208	80	127
12 Meghalaya	8	8	8	33	41	172	247	51	45	487	169
13 Mizoram	3	17	40	67	114	231	257	175	75	19	117
14 Nagaland											
15 Orissa	6	48	135	177	156	151	127	106	90	4	92
16 Punjab	38	33	62	77	82	116	151	226	196	18	127
17 Rajasthan	30	68	153	126	102	97	122	114	132	55	100
18 Sikkim	-	6	132	396	194	94	68	4	53	52	73
19 Tamil Nadu	24	52	108	119	125	128	153	132	136	42	106
20 Tripura	9	70	222	328	249	82	34	4	-	-	67
21 Uttar Pradesh	45	68	91	85	81	85	119	139	202	85	122
22 West Bengal	12	48	108	153	125	121	110	124	122	75	104
23 Delhi	37	60	158	160	133	101	98	115	94	37	87

Table D-7

PERCENTAGE FREQUENCY OF SCORES ACHIEVED BY PUPILS — SPELLINGS

Scores	0-2	3-5	6-8	9-11	12-14	15-17	18-20	21-23	24-26	Median
1 Andhra Pradesh	11.1	7.4	9.8	11.2	11.1	12.5	15.4	19.2	2.3	14.4
2 Arunachal Pradesh	10.9	9.4	17.0	18.8	17.6	11.9	10.9	3.2	2	10.5
3 Assam	6.2	8.1	13.3	16.1	16.5	15.1	14.1	9.5	1	12.5
4 Bihar	4.9	3.6	5.9	6.7	9.6	12.8	20.4	27.2	8.8	18.4
5 Gujarat	9.7	9.4	11.0	12.0	11.8	14.6	16.1	13.6	17	13.5
6 Haryana	18.3	10.7	12.1	11.3	11.0	13.0	14.0	9.0	1.6	10.1
7 Jammu	19.3	16.5	24.7	14.0	9.7	7.1	4.2	4.1	5	7.2
8 Karnataka	23.2	13.6	12.2	11.6	11.3	12.7	12.5	2.9	-	8.8
9 Kerala	6.2	13.0	21.4	19.1	13.7	11.7	8.6	4.9	1.3	10.0
10 Madhya Pradesh	18.5	18.9	11.5	12.8	17.4	6.6	10.0	4.3	-	8.7
11 Maharashtra	12.6	10.5	13.0	15.0	16.0	17.1	12.2	3.5	1	11.2
12 Meghalaya	8	4.5	16.8	21.7	18.6	10.0	11.5	6.1	10.0	12.5
13 Mizoram	4	6.6	19.6	24.9	24.9	17.9	3.3	2.5	-	11.4
14 Nagaland	-	-	-	-	-	-	-	-	-	-
15 Orissa	5.6	13.4	24.2	23.9	16.3	8.2	4.6	3.4	4	9.4
16 Punjab	8.9	6.8	9.3	9.8	8.9	11.5	18.4	20.8	5.1	16.1
17 Rajasthan	24.0	8.9	14.6	13.0	12.4	10.4	9.9	5.6	2.1	9.3
18 Sikkim	1.9	18.8	28.7	26.4	8.3	1.6	4.1	6.9	3.2	8.6
19 Tamil Nadu	4.7	8.1	15.2	14.4	15.0	15.8	15.1	9.6	2.1	12.5
20 Tripura	3.8	17.5	36.1	29.0	11.2	2.2	1	-	-	7.9
21 Uttar Pradesh	16.4	12.3	12.3	10.3	10.1	10.6	13.7	12.0	2.2	11.1
22 West Bengal	12.9	14.9	14.8	16.8	15.5	10.9	9.4	3.7	1.0	9.8
23 Delhi	19.6	8.9	12.8	9.6	13.4	14.7	11.8	6.6	2.5	11.2

Table D-8

AVERAGE SCORES AND RANKS OF THE STATES

	State	Total (207)		Arithmetic (40)		R.C.(total) (60)		Spelling (25)	
		Score	Rank	Score	Rank	Score	Rank	Score	Rank
1	Bihar	143.5	(1)	27.8	(1)	41.3	(1)	16.6	(1)
2	Mizoram	117.5	(4)	20.6	(4)	33.6	(2)	11.4	(8)
4	Gujarat	112.3	(5)	19.8	(5)	32.9	(3)	12.8	(7)
3	Punjab	111.9	(3)	21.5	(3)	29.8	(9.5)	14.4	(2)
5	Andhra Pradesh	109.8	(2)	23.4	(2)	30.2	(7)	13.3	(4)
6.	Meghalaya	106.9	(6)	19.7	(6)	29.9	(8)	13.6	(3)
7.	Uttar Pradesh	104.5	(10)	18.3	(10)	30.5	(6)	11.3	(9)
8	Haryana	103.5	(7.5)	19.4	(7.5)	30.9	(4.5)	10.9	(14)
9.	Assam	103.0	(9)	18.4	(9)	29.8	(9.5)	12.4	(6)
10	Rajasthan	102.7	(7.5)	19.3	(7.5)	30.6	(4.5)	9.6	(18)
11	Maharashtra	93.9	(16)	15.1	(16)	26.7	(12)	10.8	(10)
12.	Orissa	93.5	(12)	17.0	(12)	25.8	(16)	9.8	(17)
13	Tamil Nadu	91.2	(13)	16.5	(13)	23.6	(17)	12.8	(5)
14	Delhi	90.5	(19)	14.3	(19)	26.1	(14.5)	10.7	(11.5)
15.	Sikkim	90.4	(17)	14.7	(17)	28.3	(11)	9.9	(16)
16.	West Bengal	88.7	(14)	16.4	(14)	23.5	(18)	10.0	(15)
17	Jammu	87.5	(11)	17.9	(11)	26.5	(13)	8.0	(21)
18--	Kerala	85.5	(20)	14.1	(20)	26.1	(14.5)	10.7	(11.5)
19	Arunachal Pradesh	82.8	(15)	15.4	(15)	22.9	(19)	10.5	(13)
20	Madhya Pradesh	77.6	(21)	13.0	(21)	20.6	(20)	9.2	(19.5)
21	Nagaland	72.9*	(17)	14.8	(17)	20.2	(21)	-	-
22	Tripura	71.8	(22)	12.1	(22)	19.0	(22)	-	-
23.	Karnataka	65.8	(23)	11.0	(23)	17.3	(23)	9.2	(19.5)

+ Maximum possible score

* Corrected for maximum number of items

Table D-9

ACHIEVEMENT IN ARITHMETIC — TOPIC-WISE

State	Time	Factors & Multiples	Fundamental Operations	Weights & Measures	Fractions	Decimals	Unitary Method & Others in Percentage	Total
1. Andhra Pradesh	63.3	51.4	60.0	50.0	56.0	58.6	73.3	58.5
2. Arunachal Pradesh	40.0	31.4	36.7	33.3	32.0	48.6	56.7	38.5
3. Assam	56.7	27.8	48.3	46.7	63.3	44.3	66.7	46.0
4. Bihar	73.3	65.7	71.7	70.0	66.0	64.3	83.3	69.5
5. Gujarat	53.3	45.7	47.5	43.3	38.0	57.1	66.6	49.5
6. Haryana	53.3	47.1	49.2	40.0	38.0	50.0	60.0	48.5
7. Jammu	53.3	40.0	45.8	43.3	36.0	47.1	56.7	44.7
8. Karnataka	26.7	22.8	27.5	30.0	22.0	31.4	40.0	27.5
9. Kerala	43.3	22.8	37.5	36.7	28.0	41.4	46.7	35.2
10. Madhya Pradesh	40.0	31.4	30.0	43.3	22.0	31.4	50.0	32.5
11. Maharashtra	46.7	30.0	39.2	36.7	26.0	44.3	50.0	35.5
12. Meghalaya	56.7	47.1	50.0	46.7	54.0	40.0	56.7	49.2
13. Mizoram	53.3	52.8	48.3	50.0	46.0	55.7	60.0	51.5
14. Nagaland	36.7	32.8	33.3	26.7	32.0	44.3	46.7	35.8
15. Orissa	36.7	37.1	44.2	33.3	34.0	48.6	63.3	42.5
16. Punjab	66.7	47.1	58.3	43.3	56.7	50.0	70.0	53.7
17. Rajasthan	56.7	44.3	46.7	50.0	40.0	51.4	60.0	48.2
18. Sikkim	36.7	32.8	28.3	30.0	30.0	51.4	63.3	36.7
19. Tamil Nadu	40.0	34.3	40.3	43.3	40.0	44.3	60.0	41.2
20. Tripura	33.3	25.7	29.2	30.0	24.0	31.4	50.0	30.2
21. Uttar Pradesh	56.7	41.4	45.0	53.3	40.0	44.3	56.7	45.7
22. West Bengal	46.7	38.6	39.2	43.3	30.0	41.4	60.0	41.0
23. Delhi	40.0	31.4	32.5	30.0	32.0	41.4	50.0	35.7
Range	26.7 - 73.3	22.8 - 65.7	27.5 - 71.7	30.0 - 70.0	22.0 - 66.0	31.4 - 64.3	40.0 - 83.3	27.7 - 69.5
Median	46.7	37.1	44.2	43.3	36.0	44.3	60.0	35.7

Table D-10

CONTRIBUTION OF PUPIL-RELATED VARIABLES TO R² — READING COMPREHENSION

State	World Knowledge	Home Background	Facilities for Learning	Educational Environment at Home	Similar Language	Time Watch TV	Age	Gender	Total R ²
1 Andhra Pradesh	0328	0004	0168	0019	0041	0059	0034	0014	0667
2. Arunachal Pradesh	0952	0187	0045	0093	0005	0003	0027	0010	1323
3. Assam	2594	0187	0003	0044	0116	0019	0027	0000	2990
4 Bihar	4716	0000	0108	0042	0007	0001	0023	0001	4899
5 Gujarat	3458	0121	0012	0020	0034	0006	0001	0001	3681
6 Haryana	3399	0126	0241	0085	0004	0004	0027	0034	3916
7 Jammu	2218	0214	0061	0001	0082	0032	0040	0060	2658
8. Karnataka	1656	0028	0040	0071	0000	0005	0001	0002	1803
9 Kerala	1248	0184	0349	0075	0009	0031	0013	0004	1934
10 Madhya Pradesh	1369	0164	0181	0007	0071	0002	0991	0002	2788
11 Maharashtra	3285	0024	0062	0401	0002	0001	0000	0001	3777
12 Meghalaya	0181	0042	3485	0005	0077	0007	0083	0035	3916
13 Mizoram	0334	0000	0421	0003	0164	0045	0004	0000	0972
14 Nagaland	0140	0492	0048	0000	0131	0008	0016	0068	0903
15 Orissa	2033	0008	0287	0005	0122	0004	0013	0001	2473
16 Punjab	2195	0394	0020	0056	0010	0063	0000	0016	2755
17 Rajasthan	2546	0036	0020	0051	0016	0001	0001	0000	2671
18 Sikkim	3049	0693	0053	0278	0064	0004	0387	0000	4526
19 Tamil Nadu	1412	0096	0102	0000	0003	0023	0005	0014	1658
20 Tripura	0759	1155	0030	0121	0019	0017	0056	0003	2162
21 Uttar Pradesh	2731	0018	0057	0003	0025	0027	0000	0000	2880
22 West Bengal	1621	0095	0142	0034	0050	0004	0009	0033	1989
23 Delhi	2827	0328	0125	0011	0001	0013	0012	0095	3413
Range	01 - 47	00 - 12	00 - 35	00 - 04	00 - 164	00 - 01	00 - 10	00 - 04	
Median	2033	0121	0062	0034	0025	0007	0013	0004	2671

Table D-11

CONTRIBUTION OF PUPIL-RELATED VARIABLES TO R² — ARITHMETIC

State	Word Knowledge	Facilities for Learning	Home Background	Educational Environment at Home	Similar Language	Time Watching TV	Gender	Age	Total R ²
1 Andhra Pradesh	.0166	.0204	.0001	.0000	.0025	.0049	.0000	.0006	.0452
2 Assam	.0401	.0007	.0020	.0110	.0000	.0008	.0031	.0066	.0643
3 Bihar	.2374	.0036	.0178	.0100	.0028	.0013	.0003	.0030	.2762
4 Bombay	.3853	.0001	.0111	.0016	.0005	.0000	.0000	.0000	.3987
5 Calcutta	.2888	.0013	.0145	.0024	.0001	.0091	.0005	.0006	.3173
6 Gujarat	.2848	.0486	.0256	.0001	.0003	.0005	.0026	.0005	.3630
7 Haryana	.1270	.0013	.0262	.0001	.0025	.0075	.0000	.0119	.1765
8 Jammu	.1465	.0017	.0056	.0016	.0000	.0017	.0038	.0004	.1614
9 Karnataka	.1105	.0060	.0108	.0000	.0000	.0004	.0021	.0006	.1306
10 Kerala	.2337	.0099	.0081	.0002	.0121	.0073	.0052	.0010	.2777
11 Madhya Pradesh	.2988	.0016	.0046	.0210	.0000	.0016	.0015	.0001	.3293
12 Maharashtra	.0801	.4196	.0002	.0001	.0072	.0004	.0023	.0001	.5099
13 Meghalaya	.0433	.0184	.0014	.0000	.0048	.0023	.0117	.0004	.0823
14 Mizoram	.0372	.0033	.0207	.0007	.0220	.0048	.0006	.0001	.0892
15 Nagaland	.1974	.0274	.0080	.0005	.0030	.0011	.0024	.0009	.2408
16 Orissa	.1907	.0002	.0145	.0032	.0000	.0075	.0005	.0009	.2176
17 Punjab	.1781	.0023	.0012	.0000	.0025	.0028	.0039	.0009	.1917
18 Rajasthan	.0000	.0110	.0115	.0037	.0049	.0366	.0000	.0061	.0759
19 Tamil Nadu	.1367	.0127	.0061	.0012	.0025	.0144	.0008	.0030	.1745
20 Tripura	.0948	.0000	.0019	.0002	.0013	.0003	.0035	.0001	.1083
21 Uttar Pradesh	.2477	.0079	.0005	.0000	.0001	.0002	.0005	.0000	.2570
22 West Bengal	.1503	.0020	.0012	.0003	.0013	.0012	.0005	.0001	.1707
23 Andhra Pradesh	.1851	.0119	.0078	.0010	.0000	.0000	.0006	.0002	.2272
24 Bihar	.2200	.0000	.0000	.0012	.0000	.0016	.0021	.0000	.1917

Table D-12

CONTRIBUTION OF SCHOOL RELATED VARIABLES TO R² - READING COMPREHENSION

Variable	Andh	Arun	Assam	Bihar	Guj	Hary	Jammu	Karnat	Kerala	MP	Maha	Megh	Mizo	Naga	Orissa	Punjab	Raj	Sikkim	TN	Trig.	UP	WB	Delhi
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1 Prof. Training of Headmaster	-	-	-	-	-	-	.040 (.24)	-	-	-	-	-	-	-	-	.014 (-.20)	-	-	-	-	-	-	.156 (-.40)
2 Age of the Headmaster	.006 (.07)	-	-	-	.021 (-.12)	-	-	-	-	-	-	-	.012 (.23)	-	-	.062 (.25)	-	-	-	.031 (.24)	-	-	-
3 Teaching Exp of Headmaster	-	.027 (.09)	.022 (.21)	-	-	.017 (-.13)	-	.011 (.07)	-	.008 (.04)	-	-	-	-	.041 (.20)	-	-	-	-	-	.005 (.04)	-	-
4 Exp. as Headmaster	-	-	.010 (-.04)	-	-	-	-	-	-	.006 (.11)	-	-	.175 (.42)	-	.008 (-.03)	-	-	-	.012 (.12)	-	-	-	-
5 Location	.012 (-.03)	-	-	-	.035 (.19)	-	.150 (-.39)	-	-	-	-	-	-	-	-	.016 (-.12)	-	-	-	.121 (-.35)	-	-	-
6 Administration of School	.057 (.24)	.145 (.38)	.031 (-.23)	-	-	-	-	-	-	-	-	.061 (.30)	-	-	-	.010 (.14)	.011 (.11)	-	-	-	-	.006 (-.05)	-
7 Boys/Girls/Co-ed	-	-	.022 (-.10)	-	-	-	-	-	-	-	.008 (-.04)	.017 (.13)	-	-	-	.043 (-.16)	-	-	-	-	-	-	.047 (.05)
8 Pre-primary Classes	-	-	-	.013 (.10)	-	-	-	-	-	.018 (-.08)	-	-	.021 (.04)	-	-	.021 (.19)	-	-	-	-	.010 (.12)	-	-
9 Classes in School	-	-	.013 (.08)	.024 (-.11)	.017 (-.10)	.057 (.19)	-	-	-	-	-	-	.044 (.04)	-	-	-	-	-	-	-	-	-	-
10 Years of Existence	.020 (.12)	-	-	.018 (.14)	.013 (-.03)	-	-	.009 (-.07)	-	.007 (-.12)	-	-	-	.031 (.13)	-	.014 (.14)	.015 (-.12)	-	-	-	-	-	-
11 Working Days	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-.040 (-.18)	-	-	-
12 Total Enrolment	-	-	-	.024 (-.13)	.011 (-.01)	-	-	.009 (.15)	-	-	.117 (.34)	-	-	-	-	-	-	-	-	-	-	-	-
13 Proportion SC/ST	.014 (-.08)	.018 (-.12)	.084 (-.29)	-	-	-	-	.020 (-.14)	.027 (.17)	.033 (-.27)	-	-	.058 (-.23)	-	-	.025 (.18)	-	-	-	.043 (-.01)	.010 (-.09)	.015 (.10)	.076 (-.39)
14 Age of the Pupil	.012 (.10)	.008 (-.22)	-	-	-	.028 (-.14)	.020 (.10)	.015 (.14)	-	-	.017 (-.28)	.031 (-.52)	.084 (.17)	-	-	-	-	-	-	-	-	-	-
15 Teachers – Untrained	-	.042 (.18)	-	-	-	.040 (-.19)	-	-	-	.028 (.06)	.006 (-.11)	.021 (-.04)	.041 (-.27)	-	-	.073 (.19)	-	-	-	-	-	-	-
16 Trs per Class Group	.006 (.02)	-	-	-	-	.063 (-.25)	-	.45 (.21)	.011 (-.14)	-	-	-	-	-	-	-	-	-	-	.059 (.29)	-	-	-

Table D-12 Continued

Table D-12 Continued

(Table D-12 Continued)

Variable	Andh	Arun	Assam	Bihar	Guj	Hary'	Jammu	Karnat	Kerala	MP	Madha	Megh	Mizn	Nagaa	Orissa	Punjab	Raj	Sikkim	TN	Tripu	UP	WB	IN
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
17. Rooms per Class Group	010 (.16)	-	-	-	-	036 (.23)	-	008 (.02)	.007 (.10)	-	-	-	-	.075 (-.33)	-	029 (.16)	-	-	-	-	-	012 (.08)	
18 Room for Headmaster	.004 (.12)	-	-	-	-	-	-	-	-	-	-	056 (-.21)	172 (-.39)	012 (.10)	-	-	-	-	-	-	-	-	
19 Facilities for Teachers	-	021 (-.06)	016 (.11)	-	-	016 (.08)	-	-	006 (-.28)	013 (.23)	-	047 (.14)	-	-	011 (.04)	011 (-.10)	-	-	017 (.24)	-	020 (.14)		
20 Facilities for Pupils	009 (.20)	-	-	-	-	-	-	-	-	037 (.29)	-	-	-	038 (-.10)	-	-	-	-	-	-	035 (.26)		
21 Books in the Library	011 (.20)	-	-	-	-	019 (.02)	-	-	090 (-.30)	-	-	051 (.21)	-	-	015 (-.02)	009 (-.12)	-	-	041 (.22)	-	007 (-.06)		
22 Book Bank	-	-	-	-	-	-	-	-	-	-	-	012 (-.11)	-	040 (-.16)	-	-	-	-	-	-	-	-	
23 No-Detention Policy	028 (-.19)	-	-	007 (-.08)	-	-	-	-	-	-	-	031 (.11)	034 (.05)	010 (-.13)	-	-	-	-	-	006 (.10)	-	016 (.18)	
24 Incentive Schemes	-	-	-	-	-	-	-	-	006 (-.11)	-	-	-	-	-	-	-	-	-	-	010 (.09)	-	-	
25 Financial Freedom	-	-	-	008 (.12)	-	-	-	-	016 (.18)	.028 (.24)	-	-	-	-	-	-	-	-	-	-	-	-	
26 Percentage Attendance	-	-	-	-	015 (-.18)	038 (.21)	-	021 (.16)	-	049 (.24)	-	-	-	166 (.41)	-	021 (.16)	-	-	-	-	-	-	
27 Time Given to Lang	-	-	-	-	016 (.08)	016 (.08)	-	008 (-.05)	006 (.01)	-	021 (.52)	-	-	-	018 (.03)	-	006 (-.11)	-	-	-	-	-	
28 Time Given to Arith	-	-	-	012 (.13)	019 (.17)	-	014 (-.12)	014 (-.11)	010 (.02)	-	318 (.56)	-	-	-	011 (.05)	-	.015 (-.14)	-	038 (-.19)	-	-	-	
29. Operation Blackboard	026 (.15)	-	019 (.15)	023 (.17)	-	-	.052 (.23)	-	-	-	-	036 (-.05)	-	021 (.18)	-	-	-	-	-	-	-	-	
30. PTA	.010 (.12)	.049 (.24)	-	015 (-.14)	-	-	013 (.14)	-	051 (-.23)	-	-	-	-	009 (.05)	019 (.18)	-	-	020 (.14)	017 (-.21)	-	-	-	
31. Participation in Projects	-	-	048 (-.21)	-	-	-	-	014 (-.12)	-	-	-	-	-	-	-	-	-	.010 (.10)	-	003 (.05)	-	048 (.24)	
Total	212	.319	266	154	.111	312	.310	151	.241	239	506	667	.479	142	440	047	-	063	369	082	059	358	

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[illegible]

(Table D-12 Continued)

Variable	Audh	Arun	Assam	Bihar	Guj.	Hary	Jammu	Karnat	Kerala	MP	Maha	Megh	Mizo	Naga	Orissa	Punjab	Raj	Sikkim	TN	Trip	UP	WB	Delhi
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
18 Room for Headmaster	-	-	-	-	-	-	-	-	028 (-17)	012 (26)	-	-	-	248 (-46)	013 (08)	-	-	-	-	041 (15)	-	-	-
19 Facilities for Trs	-	029 (-16)	011 (11)	-	-	-	-	051 (23)	-	-	-	-	-	-	010 (-07)	-	012 (-16)	-	-	-	-	008 (09)	-
20 Facilities for Pupils	-	-	-	-	-	-	-	-	-	024 (-21)	-	010 (06)	-	-	-	033 (-18)	-	-	-	-	-	-	-
21 Books in the Library	-	-	-	-	-	-	-	-	-	145 (-38)	-	-	-	-	-	-	-	-	-	-	011 (-09)	007 (-08)	-
22 Book Bank	-	-	-	-	-	021 (13)	-	-	-	-	-	-	-	-	024 (-16)	019 (-18)	-	-	-	048 (18)	-	-	-
23 No Detention Policy	017 (-14)	-	013 (15)	009 (-03)	-	-	-	-	-	-	010 (-00)	015 (63)	-	-	-	-	015 (-13)	-	006 (09)	015 (06)	014 (12)	-	030 (13)
24 Incentive Schemes	-	-	-	-	-	-	-	-	-	-	007 (-03)	021 (66)	-	-	-	-	-	-	-	053 (-23)	007 (07)	-	-
25 Financial Freedom	-	-	-	018 (15)	-	030 (-05)	-	-	-	-	025 (21)	-	-	-	-	-	-	-	-	-	-	-	-
26 Percentage Attendance	-	-	-	-	014 (-18)	051 (23)	-	009 (14)	-	-	050 (24)	019 (32)	-	319 (57)	-	-	010 (-06)	-	-	-	-	-	-
27 Time Given to Lang	-	-	-	-	-	-	025 (12)	-	-	-	-	481 (69)	-	-	-	027 (-01)	-	-	008 (-08)	-	-	-	-
28 Time Given to Arth	010 (-12)	025 (19)	-	-	-	-	-	-	-	-	-	009 (64)	025 (16)	-	-	012 (09)	-	-	-	-	009 (-09)	-	-
29 Operation Blackboard	049 (22)	-	-	-	-	019 (00)	017 (15)	-	-	-	-	-	015 (-04)	-	040 (20)	014 (03)	-	-	010 (07)	-	010 (09)	018 (13)	-
30 PTA	017 (16)	025 (20)	-	039 (20)	-	-	-	-	037 (-19)	-	-	013 (07)	051 (23)	021 (22)	-	021 (17)	-	-	017 (15)	-	-	-	-
31 Participation in Projects	-	-	013 (-13)	-	-	-	-	-	006 (-11)	-	-	-	-	-	-	012 (08)	-	-	008 (10)	-	-	-	141 (38)
Total	167	216	237	182	107	311	265	103	120	335	214	766	350	722	114	321	120	-	108	368	090	074	358

Table E-1**PUPIL-RELATED VARIABLES**

1	Location of School
2	Age
3	Sex
4	Father's Occupation
5	Caste
6	Similarity of Local Language and Mother Tongue
7	Pre-Schooling
8.	Father's Education
9	Mother's Education
10	No. of Siblings
11.	Separate Place for Study
12	Help in School Homework
13	Availability of Textbooks
14	Availability of Notebooks/Writing Materials
15	Time Spent in Helping Parents
16	Regularity in School
17	Getting Newspapers at Home
18	Getting Magazines at Home
19	Available Books Other than Textbooks at Home
20	Reading Books Other than Textbooks
21	Time Spent in Watching TV
22.	Arithmetic
23.	Reading Comprehension (Paragraph)
24	Reading Comprehension (Sentences)
25	Word Knowledge
26	Appropriate Word
27.	Sentence Structure
28	Spelling Test
29	Reading Comprehension (Total)
30	Home Background
31	Facility in Learning
32	Environment at Home

Table E-2**SCHOOL RELATED VARIABLES**

<i>Variable No</i>	<i>Nomenclature</i>
1.	Professional Training of the Headmaster
2	Age of the Headmaster
3	Teaching Experience of the Headmaster
4	Experience as Headmaster
5.	Location of the School
6	Administration of the School
7.	Boys/Girls/Co-Ed
8	Pre- Primary Classes Attached to the School
9	Classes in School (Primary/Middle/Secondary)
10	Years of Existence of School
11	Number of Working Days (1989-90)
12	Total Enrolment of Classes I-IV
13	Proportion of SC/ST
14.	Age of the Pupil (Class IV)
15	Proportion of Teachers Untrained
16	No of Teachers per Class Group
17	No of Rooms per Class Group
18.	Separate Room for Headmaster
19.	Facilities for Teachers
20	Facilities for Students
21	Number of Books in the Library
22	Existence of Book Bank in the School
23.	No Detention Policy
24	Incentive Schemes in the School
25	Financial Freedom to the Headmaster
26.	Percentage Attendance (I-IV)
27.	Time given to teaching Language
28	Time given to teaching Arithmetic
29	Operation Blackboard Scheme
30	Existence of Parent Teacher Association
31	Participation in Special Projects
32	Mean Score in Arithmetic
33	Mean Score in Reading Comprehension (Total)

Test F-1

प्राथमिक विद्यालयों के विद्यार्थियों की उपलब्धियां

कोड

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स्तम्भ सं०

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अंकगणित

विद्यार्थी का नाम

पिता का नाम

दिनांक कक्षा

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(1) राज्य

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(2) क्षेत्र

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(3) जिला

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(4) शहर/कस्बा/ ब्लॉक / तालुक

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(5) विद्यालय का कोड

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(6) विद्यार्थी का कोड

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पहले रिकार्ड का कोड

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टी ओ. ए. डमी कोड

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13-14

मापन, मूल्यांकन, सर्वेक्षण एवं आधार सामग्री प्रक्रियण विभाग
राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्

श्री अरविन्द मार्ग, नई दिल्ली . 110 016

निर्देश :-

इस परीक्षण में कुछ प्रश्न हैं। प्रत्येक प्रश्न के नीचे चार सम्भावित उत्तर भी दिए हुए हैं। इनमें से सही उत्तर ढूँढ़कर उसके क्रमांक पर घेरा लगाओ।

उदाहरण के लिए -

यदि एक पुस्तक की कीमत 5 रुपये है तो तीन पुस्तकों की क्या कीमत होगी ?

- (1) 8 रुपये
- (2) 15 रुपये
- (3) 10 रुपये
- (4) 9 रुपये

दिये गए चार उत्तरों में से 15 रुपये सही उत्तर है जिसकी क्रमांक संख्या "(2)" पर घेरा लगाया गया है। सभी प्रश्न करने हैं। यदि तुम्हें कोई प्रश्न नहीं आता तो उसे छोड़कर अगला प्रश्न करो और इस तरह करते चले जाओ। यदि तुम्हें "रफ" काम करना है तो प्रश्न के सामने बची जगह पर ही करो।

- 1 289
 +74
 + 7609 का योग किसके बराबर है?
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-

- (1) 7962
- (2) 7972
- (3) 7872
- (4) 7852

- 2 कौन सी संख्या सबसे बड़ी है?

- (1) 2 058
- (2) 2.085
- (3) 2.089
- (4) 2 098

3. एक किलोग्राम कितने ग्राम के बराबर होता है ?

- (1) 10
- (2) 100
- (3) 1,000
- (4) 10,000

- 4 दो संख्याओं का अन्तर 44 है । यदि छोटी संख्या 432 है तो बड़ी संख्या क्या होगी ?

- (1) 388
- (2) 398
- (3) 467
- (4) 476

5 धारिता किसमें मापी जाती है?

- (1) मिलीलीटर
- (2) सेंटीमीटर
- (3) ग्राम
- (4) इनमें से कोई नहीं

6 निम्न आकृति में कितने रेखाखंड हैं?



- (1) 4
- (2) 6
- (3) 7
- (4) 8

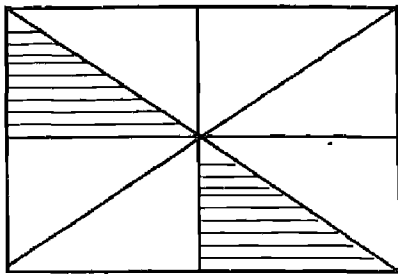
7 संख्या 48 के अभाज्य गुणनखण्ड क्या हैं ?

- (1) $2 \times 2 \times 2 \times 2 \times 3$
- (2) $2 \times 4 \times 2 \times 3$
- (3) $4 \times 4 \times 3$
- (4) $6 \times 4 \times 2$

8 यदि 9 कापियों की कीमत 45 ₹ है तो एक कापी की कीमत क्या होगी ?

- (1) 7 ₹
- (2) 6 ₹
- (3) 5 ₹
- (4) 4 ₹

9 इस आकृति के छायांकित भाग को भिन्न में कैसे लिखा जाएगा?



(1) $\frac{1}{4}$

(2) $\frac{1}{3}$

(3) $\frac{2}{3}$

(4) $\frac{3}{4}$

10 6 और 8 का लघुतम समापवर्त्य क्या है?

(1) 2

(2) 12

(3) 14

(4) 24

11. यदि एक संख्या दूसरी का गुणज है तो इन संख्याओं का लघुतम समापवर्त्य क्या होगा ?

(1) दोनों में से कोई नहीं

(2) दोनों का गुणनफल

(3) छोटी संख्या

(4) बड़ी संख्या

12 15 मीटर फीते का दाम 30 रु. है। 3 मीटर फीते का क्या दाम होगा ?

(1) 2 रु

(2) 5 रु

(3) 6 रु

(4) 10 रु

13 2,05 का रूपये तथा पैसे में कैसे लिखेंगे ?

- (1) 2 रूपये 50 पैसे
- (2) 2 रूपये 5 पैसे
- (3) 20 रूपये 50 पैसे
- (4) 20 रूपये 5 पैसे

14. एक घंटा 35 मिनट में कुल कितने मिनट होंगे ?

- (1) 635 मिनट
- (2) 135मिनट
- (3) 105 मिनट
- (4) 95 मिनट

15 यदि चीनी की एक बोरी का दाम 500 रु. हो तो 6 बोरियों का दाम मालूम करने के लिए तुम्हें क्या करना होगा ?

- (1) 5000रु. को 6 से गुणा
- (2) 500 रु को 6 से भाग
- (3) 500 रु में 6 जमा
- (4) 500 रु में से 6 घटाना

16. यदि 54 को बीस बार जमा करना हो तो जल्दी और सही करने के लिए कौन सा तरीका सबसे अच्छा है?

- (1) 54 और 20 को जमा करना
- (2) 54 को 20 से गुणा करना
- (3) 54 को एक से गुणा करना
- (4) सख्या को बार-बार जमा करना

17 निम्नलिखित में से कौनसी भिन्न सरलतम रूप में है ?

(1) $\frac{15}{24}$

(2) $\frac{10}{16}$

(3) $\frac{5}{8}$

(4) $\frac{20}{32}$

18 4060 ग्राम को किलोग्राम और ग्राम में कैसे लिखेंगे ?

(1) 40 किलोग्राम 60 ग्राम

(2) 4 किलोग्राम 6 ग्राम

(3) 4 किलोग्राम 60 ग्राम

(4) 4 किलोग्राम 600 ग्राम

19 किस समूह की चारों संख्याएं 7 की गुणज हैं ?

(1) 14,23,49,56

(2) 7,21,42,65

(3) 28,35,42,67

(4) 21,28,63,77

20 एक विद्यालय में 2375 विद्यार्थी हैं । इनमें से 1349 लड़के हैं । विद्यालय में कितनी लड़कियां हैं ?

(1) 1025

(2) 1026

(3) 1036

(4) 3724

21 10 30 प्रात के 4 घटे बाद क्या समय होगा ?

- (1) 2 30 प्रात
- (2) 2 30 दोपहर
- (3) 6 30 प्रात
- (4) 14 30 प्रात

22 नीचे दी गई भिन्न के जोडो मे से कौन सा जोडा तुल्य भिन्नो का है ?

- (1) $\frac{1}{6}$, $\frac{3}{8}$
- (2) $\frac{2}{7}$, $\frac{4}{14}$
- (3) $\frac{3}{6}$, $\frac{4}{12}$
- (4) $\frac{2}{7}$, $\frac{4}{7}$

23 $7 \times 0 \times 9$ किसके बराबर है ?

- (1) 0
- (2) 7
- (3) 9
- (4) 63

24 घटे की सूई 4 और 5 के बीच में है और मिनट की सूई 19वें निशान पर है । घडी में कितने बजे हैं?

- (1) 5 : 30
- (2) 5 : 19
- (3) 4 : 30
- (4) 4 : 19

- 25 एक त्रिभुज का परिमाण 48 सेमी है । यदि त्रिभुज की तीनों भुजाएँ बराबर हों तो प्रत्येक भुजा की लम्बाई कितने सेमी होगी ?
- (1) 12 सेमी
 - (2) 16 सेमी
 - (3) 24 सेमी
 - (4) कुछ कहा नहीं जा सकता
- 26 10 मीटर लम्बे कपड़े के टुकड़े में से $3\frac{1}{4}$ मीटर कपड़ा एक सूट बनवाने के लिए ले लिया गया । बाकी कितना कपड़ा बचा ?
- (1) $6\frac{3}{4}$ मीटर
 - (2) $7\frac{1}{4}$ मीटर
 - (3) $7\frac{3}{4}$ मीटर
 - (4) $13\frac{1}{4}$ मीटर
- 27 मोहन ने बाढ़-पीड़ितों की सहायता के लिए 2,000 रुपये दिये । आजाद ने उससे 375 रुपये कम दिये । दोनों ने कुल कितना रुपया बाढ़-सहायता कोष में दिया ?
- (1) 625 रुपये
 - (2) 2375 रुपये
 - (3) 3625 रुपये
 - (4) 4375 रुपये
- 28 जिस संख्या का स्वयं और एक के अतिरिक्त और कोई गुणनखंड नहीं होता उसे क्या कहते हैं ?
- (1) सम
 - (2) संयुक्त
 - (3) मिश्रित
 - (4) अभाज्य

29. कौन सी विषम संख्या है ?

- (1) 27536
- (2) 46867
- (3) 72864
- (4) 25794

30. " 10 में से 8" का दशमलव रूप कौन सा है ?

- (1) 0 01
- (2) 0 08
- (3) 0 8
- (4) 0 10

31. $\frac{1}{2}$ से $\frac{1}{3}$ कितना कम है ?

- (1) $\frac{1}{6}$
- (2) $\frac{1}{3}$
- (3) $\frac{1}{2}$
- (4) $\frac{5}{6}$

32. किस संख्या में 8 का स्थानीय मान सबसे अधिक है?

- (1) 127 850
- (2) 143 980
- (3) 279 008
- (4) 731 589

33 8.975 में 7 का स्थानीय मान क्या है ?

(1) $\frac{7}{100}$

(2) $\frac{7}{10}$

(3) 7

(4) 70

34 किस क्रिया से " भिन्न " के मूल्य में कोई अन्तर नहीं पड़ता ?

(1) हर को किसी संख्या से गुणा करने पर

(2) अंश को किसी संख्या से गुणा करने पर

(3) हर और अंश दोनों को किसी एक ही संख्या से गुणा करने पर

(4) हर को किसी संख्या से भाग देने और अंश को उसी संख्या से गुणा करने पर

35 नीचे दिये प्रश्नों को बिना हल किए अनुमान लगाइये कि भागफल किसमें सबसे अधिक होगा?

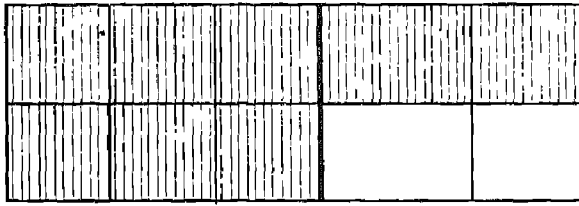
(1) $4 \overline{) 5376}$

(2) $12 \overline{) 5376}$

(3) $14 \overline{) 5376}$

(4) $16 \overline{) 5376}$

36. आकृति के छायांकित भाग को दशमलव में कैसे लिखा जाएगा ?



(1) 0.04

(1) 0.06

(3) 0.4

(4) 0.6

37. एक मोटर गाड़ी पहले घंटे में 40 किमी, 650 मीटर चली। दूसरे घंटे में गाड़ी केवल 30 किमी 800 मीटर चली। गाड़ी ने कुल कितना फासला तय किया ?

(1) 10 किमी 150 मीटर

(2) 70 किमी 450 मीटर

(3) 71 किमी 450 मीटर

(4) 71 किमी 1450 मीटर

38. नीचे हल किए हुए भाग के प्रश्न को ध्यान से देखो। भाज्य को क्या किया जाए कि वह 23 से पूरी तरह विभाजित हो जाए ?

$$\begin{array}{r}
 245 \\
 23 \overline{) 5649} \\
 \underline{46} \\
 104 \\
 \underline{92} \\
 129 \\
 \underline{115} \\
 14
 \end{array}$$

(1) 14 जोड़ा जाए

(2) 14 घटाया जाए

(3) 23 जोड़ा जाए

(4) 23 घटाया जाए

39 नीचे दो संख्याओं के अभाज्य गुणनखण्ड दिए गए हैं

पहली संख्या $2 \times 2 \times 5$ दूसरी संख्या $3 \times 5 \times 5$

इनका लघुतम समापवर्त्य क्या है ?

(1) $5 = 5$

(2) $2 \times 3 \times 5 \times 5 = 150$

(3) $2 \times 2 \times 3 \times 5 \times 5 = 300$

(4) $2 \times 2 \times 3 \times 5 \times 5 \times 5 = 1500$

40 दशमलव का उपयोग करते हुए 5 मीटर 80 सेंटीमीटर को मीटर में कैसे लिखते हैं?

(1) 0.058 मीटर

(2) 5.08 मीटर

(3) 5.80 मीटर

(4) 58.0 मीटर

प्राथमिक विद्यालयों के विद्यार्थियों की उपलब्धियां

कोड

स्तम्भ सं०

2

हिन्दी

विद्यार्थी का नाम

पिता का नाम

दिनांक कक्षा

(1) राज्य

0 7

(2) क्षेत्र

(3) जिला

(4) शहर/कस्बा/ ब्लॉक / तालुका

(5) विद्यालय का कोड

(6) विद्यार्थी का कोड

टी ओ एच डी कोड

2 0

मापन, मूल्यांकन, सर्वेक्षण एवं आधार सामग्री प्रक्रियण विभाग
राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्

श्री अरविन्द मार्ग, नई दिल्ली 110 016

पठनबोध (अनुच्छेद)

इस परीक्षण में कुछ अनुच्छेद हैं और उन पर कुछ प्रश्न पूछे गए हैं । पहला अनुच्छेद पढ़कर उस पर पूछे प्रश्नों के उत्तर दो । फिर दूसरा अनुच्छेद पढ़ो और फिर तीसरा आदि जब तक तुम सारा परीक्षण समाप्त नहीं कर लेते ।

प्रत्येक प्रश्न के चार सम्भव उत्तर दिए गए हैं । इनमें से सबसे अच्छा उत्तर चुनो और उसके अंक के चारों ओर घेरा खींचो ।

जितनी बार तुम्हें अनुच्छेद पढ़ने की आवश्यकता जान पड़े, पढ़ो । प्रत्येक प्रश्न का उत्तर देने का प्रयत्न करो । यदि तुम्हें किसी प्रश्न का उत्तर नहीं आता हो , उसे छोड़कर अगला प्रश्न करो । यदि समय बचे तो दोबारा प्रश्न का उत्तर देने का फिर से प्रयत्न करो ।

उदाहरण के लिए –

बनिये ने सेठ से अपनी तराजू मांगी तो सेठ ने कह दिया कि उसे तो चूहे खा गए । बनिया सेठ की बदनीयती साफ समझ गया और बोला “कोई बात नहीं सेठ जी , आप अपने लड़के को मेरे घर तक भेज दीजिएगा, मैं परदेश से लाए हुए कुछ उपहार उसे दूंगा ।” जब लड़का बनिये के घर आया तो उसने लड़के को छुपा दिया और शोर मचाने लगा, “बचाओ, बचाओ, सेठ के लड़के को चील उड़ाकर ले गई ।”

क. बनिये ने सेठ के लड़के को क्यों छुपा दिया ?

- (1) वह सेठ को सबक सिखाना चाहता था ।
- (2) वह चाहता था कि लड़के को भी चूहे खा जाएं ।
- (3) वह सेठ से मजाक करना चाहता था ।
- (4) वह लड़के को डराकर तराजू का भेद पूछना चाहता था ।

ख क्या तुम समझते हो कि

- (1) तराजू चूहे सचमुच खा गये होंगे
- (2) तराजू सेठ से खो गई होगी
- (3) सेठ ने तराजू रख ली और झूठ बोल दिया कि तराजू चूहे खा गए
- (4) सेठ ने बनिए से मजाक किया था

प्रश्न (क) का शुद्ध उत्तर "1" है । इसका संकेत हमें अन्तिम वाक्य से मिलता है । तराजू को चूहे नहीं खा सकते और लडके को चील उड़ाकर नहीं ले जा सकती । प्रश्न (ख) का शुद्ध उत्तर "3" है क्योंकि चूहे तराजू नहीं खा सकते । इसलिए प्रश्न (क) में "1" पर और प्रश्न (ख) में क्रमांक "3" पर घेरा खींचा गया है ।

दत्ता परिवार के यहां काली पूजा के अवसर पर नाटक खेलने के लिए एक अस्थायी रंगमंच बनाया जा रहा है। 'मेघनाथ वध' खेला जाएगा। इससे पहले गांवों में 'जात्रा' तो मैंने कई बार देखी है पर नाटक देखने के अवसर अधिक नहीं मिले। दिन भर मैंने न खाना खाया और न ही आराम किया। रंगमंच बनाने का अवसर पाने से मेरी खुशी का ठिकाना न था।

यही नहीं जो राम की भूमिका खेलने जा रहा है स्वयं उसने मुझे एक रस्सी पकड़ने को कहा। अब तो मुझे ऐसा लगता है कि रिहर्सल के दौरान जब शामियानों की दरारों में से अंदर झाँकते लड़कों को लाठी से गोदा जाएगा मुझे कुछ नहीं कहा जाएगा। मेरे ऊपर श्री राम की कृपा जो है। यदि वह मुझे देख ले तो सम्भव है एकाध बार अन्दर भी बुला लें। मैंने कई बार 'राम' का ध्यान खींचने का यत्न किया, मगर उसने मुझे नहीं पहचाना। रस्सी पकड़ने की आवश्यकता समाप्त हो चुकी थी।

1. किसके घर में किस अवसर पर नाटक खेलने के लिए रंगमंच बनाया जा रहा था ?

- (1) दत्ता के घर लक्ष्मीपूजा
- (2) घोष के घर काली पूजा
- (3) दत्ता के घर कालीपूजा
- (4) राम के घर कालीपूजा

2. लेखक को नाटक देखने के कितने अवसर मिले ?

- (1) उसने एक भी नाटक नहीं देखा था।
- (2) बहुत कम मौके मिले।
- (3) कई मौके मिले।
- (4) उसे नाटक देखने की इच्छा ही नहीं थी।

3. रंगमंच बनाने के लिए कहे जाने पर -

- (1) लेखक खुश हुआ।
- (2) उसे बुरा लगा।
- (3) उसे क्रोध आया।
- (4) उस पर कोई असर नहीं हुआ।

4. तुम्हारे विचार मे यह प्रसंग कौन बता रहा है ?
- (1) एक भिखारी
 - (2) एक वृद्ध आदमी
 - (3) एक लड़का
 - (4) एक शैतान बालक
5. उसे रस्सी पकड़ने को किसने कहा ?
- (1) जो रावण बना था
 - (2) जो सीता बना था
 - (3) जो राम बना था
 - (4) रगमच प्रबधक ने
6. लेखक के अनुसार, वह किसकी वजह से मार खाने से बच जायेगा ?
- (1) राम
 - (2) मेघनाद
 - (3) सीता
 - (4) रगमच प्रबधक
7. जब राम ने लड़के को नहीं पहचाना तो उसे कैसा लगा ? वह -
- (1) क्रोधित हुआ
 - (2) उत्तेजित हुआ
 - (3) ऊब गया
 - (4) निराश हुआ
8. “ मेघनाद-वध ” क्या है ?
- (1) एक खेल
 - (2) एक नाटक
 - (3) एक क्रिया-कलाप
 - (4) रगमच

एक समय की बात है, बომदिला की तरीई मे दो भाई रहते थे । वे बडी सादी, ईमानदारी की जिन्दगी जीते थे । सुबह होते ही दोनों भाई जीविकोपार्जन के लिये छोटे-छोटे काम की तलाश मे निकल जाते ।

कड़ाके की सर्दी पड रही थी । बीमार होने के कारण बडा भाई चिनचिन काम पर न जा सकता था । खराब मौसम मे चिनचक काम की तलाश में निकला । शहर के पूर्वी भाग में किसी व्यापारी के आलीशान मकान में उसने शादी की तैयारियाँ होती देखीं । वही उसने मजदूरी की प्रार्थना की ।

वहा पर पानी सहज उपलब्ध नहीं था । उसे दूर के झरने से पानी लाने का काम सौंपा गया । कड़कड़ाती सर्दी में चिनचक दिन भर मेहनत और लगन से पानी भरता रहा । व्यापारी उसकी ईमानदारी और भलेपन से बहुत प्रभावित हुआ और उसने उसे अपने कालीन बनाने के कारखाने मे एक अच्छी नौकरी पर लगा दिया । बाद में उसके भाई को भी काम दिया गया ।

9. इस गद्यांश में लेखक क्या कहना चाहता है ?

- (1) गरीब लोग मेहनत से काम करते हैं ।
- (2) व्यापारी प्रसन्न होते हैं तो अच्छा इनाम देते हैं ।
- (3) ईमानदारी और मेहनत से काम करने का फल मिलता है ।
- (4) मौसम अच्छा हो या खराब काम करते रहना चाहिए ।

10. गद्यांश पढ़ने से लगता है कि बომदिला में रहने वाले ये भाई -

- (1) शहर मे रहते थे ।
- (2) छोटी आयु के थे ।
- (3) अशिक्षित थे ।
- (4) गरीब थे ।

11. "चिनचिन" किसका नाम है ?

- (1) बड़े भाई का
- (2) छोटे भाई का
- (3) व्यापारी का
- (4) लेखक का

12. काम की तलाश में चिनचक अकेला क्यों निकला?

- (1) वह अकेले ही जाता था ।
- (2) उसका भाई बीमार था ।
- (3) दो आदमियों को एक साथ काम नहीं मिलता था ।
- (4) वह अपने भाई से अधिक मेहनती था ।

13. व्यापारी चिनचक से इतना प्रसन्न क्यों हुआ ?

- (1) सड़ि में और कोई काम करने वाला न था
- (2) उसे पानी की बडी जरूरत थी ।
- (3) चिनचक ने बडी मेहनत से काम किया था
- (4) चिनचक बडा भला नौजवान था ।

14. चिनचक को क्या इनाम मिला ।

- (1) उसका भाई ठीक हो गया
- (2) बहुत सा खाना और पैसा
- (3) अच्छा काम करने का सतोष
- (4) एक अच्छी नौकरी

क्या तुम मुझे जानते हो ? मैं पानी हूँ। मेरा कोई रंग या गन्ध नहीं है। आकार भी नहीं है। मैं अपने पात्र का ही आकार धारण कर लेता हूँ।

तुम मुझे तीन रूपों में देखते हो। पर्वतों की उंचाइयों पर या बहुत ठंडी जगहों पर मैं एक दम कड़ा हो जाता हूँ और पत्थर की तरह मजबूत। तब तुम मुझे बर्फ के रूप में देखते हो। जब गर्मी मुझे छूती है तो मैं पिघलने लगता हूँ। और मेरा रूप होता है द्रव। तब मैं पहाड़ियों के नीचे बहता हूँ किसी नाले या झरने की तरह। प्रकृति के मधुर स्वर गुनगुनाता मे आगे बढ़ता हूँ। अन्ततः मैं समुद्र या झील में मिल जाता हूँ। इस रूप में मैं तुम्हें झील, तालाब और कुओं में भी मिलता हूँ। बहुत गर्मी में मैं बाष्प बनकर ऊपर की ओर उड़ जाता हूँ।

मैं जीवन-रस हूँ और मेरे बिना मनुष्य, पशु-पक्षी, पेड़-पौधे कोई भी जीवित नहीं रह सकते ?

15. पानी को जीवन-रस क्यों कहा गया है ?

- (1) पानी सब को अच्छा लगता है।
- (2) पानी के बिना जीवन हो ही नहीं सकता।
- (3) कारखाने पानी के बिना नहीं चल सकते।
- (4) पानी हम रोज पीते हैं।

16. बहुत ठंडी जगहों में पानी किस रूप में दिखाई देता है ?

- (1) झरना
- (2) ओस
- (3) बर्फ
- (4) बादल

17. पहले वाक्य में “मुझे” का प्रयोग किसके लिए हुआ है ?

- (1) कवि
- (2) पानी
- (3) बादल
- (4) पढ़ने वाला

18. “प्रकृति के मधुर स्वर गुनगुनाता .. .” से किस ओर संकेत है ?

- (1) किसी के गाने की आवाज
- (2) पक्षियों का चहचहाना
- (3) कुएँ से पानी निकालने की आवाज
- (4) पानी बहने की आवाज

19. ऊपर के अनुच्छेद में पानी के कौन से रूप दिए गए हैं ?

- (1) नदी, नाले और तालाब
- (2) पहाड़, नदी और समुद्र
- (3) बर्फ, पानी और भाप
- (4) द्रव, चट्टान और बादल

20. पहाड़ों से बहता पानी कहाँ जाता है ?

- (1) कुओं और तालाबों में
- (2) समुद्र या झील में
- (3) बादल बनकर उड़ जाता है
- (4) बिजली बनाने के काम आता है ।

21. “ पानी का कोई आकार नहीं है” से क्या तात्पर्य है ?

- (1) इसकी कोई निश्चित लम्बाई, चौड़ाई या रूप नहीं है ।
- (2) पानी बहता रहता है ।
- (3) पानी कई रूप धारण कर लेता है ।
- (4) पानी को पकड़ा नहीं जा सकता ।

हवा और पानी के बाद जीवन के लिये सबसे आवश्यक वस्तु है - भोजन । प्राचीन काल में मनुष्य फल और कन्द-मूल खाकर और नदियों का पानी पीकर जीता था । जब प्रकृति से स्वतः प्राप्त खाना कम पड़ने लगा, उसने खेती-बाड़ी आरम्भ की । जल्दी ही मनुष्य को समझ में आ गया कि नदियों के किनारों की उपजाऊ भूमि खेती के लिये सबसे उपयुक्त है और वह नदियों के किनारों पर बसने लगा । इस तरह कृषि - प्रधान सभ्यता का विकास हुआ । इतिहास बताता है कि सारी प्राचीन सभ्यताएं नदियों के किनारों पर ही फली फूली ।

22. कृषि के लिये सबसे अच्छी जगहें कौन सी पाई गई ?

- (1) नदी का किनारा
- (2) जंगल
- (3) पहाड़ों पर की भूमि
- (4) समुद्र तट

23. जीवन के लिये सबसे आवश्यक क्या है ?

- (1) खाना और घर
- (2) हवा, पानी और खाना
- (3) खाना और कपड़ा
- (4) खाना कपड़ा और मकान

24. पहले पहल मनुष्य ने खेती क्यों की ?

- (1) उस के पास उपजाऊ भूमि थी
- (2) प्रकृति से प्राप्त खाना कम पड़ने लगा था
- (3) पृथ्वी पर जलवायु बदलने लगी थी ।
- (4) अच्छे बीज उपलब्ध थे ।

25. प्राचीन सभ्यताएं कहाँ फली फूली ?

- (1) पहाड़ी इलाकों में
- (2) समुद्र तट के पास
- (3) ऐसी जगहों पर जहाँ कोई नहीं रहता था
- (4) नदियों के किनारे

26. अपने आप पैदा होने वाले खाने के कम पड़ने का क्या कारण हो सकता है?

- (1) जनसंख्या बराबर बढ़ती जा रही थी ।
- (2) मिट्टी कम उपजाऊ हो गई थी
- (3) वर्षा कम होने लगी थी ।
- (4) खेती पर कम ध्यान दिया जा रहा था

27. प्राचीन काल में मनुष्य क्या खाता था ?

- (1) दूध और दही
- (2) अंडे और मांस
- (3) फल और पौधों की जड़ें
- (4) चावल और अन्य अनाज

28. "प्राचीन सभ्यताएं नदियों के किनारों पर ही फली-फूली" इस कथन से तुम क्या समझते हो ?

- (1) सभ्यताओं के विकास के लिए पानी अति आवश्यक था ।
- (2) नदियों के आस-पास के स्थान रेतीले होते थे ।
- (3) अधिकतर लोग पानी के आस-पास रहते थे ।
- (4) पुराने लोग कुओं से नदियाँ अधिक पसन्द करते थे ।

एक दिन स्कूल में अकगणित के कुछ प्रश्न घर पर हल करने के लिए दिये गये । गोपाल कृष्ण उनमें से एक प्रश्न हल न कर सका । वह एक दूसरे विद्यार्थी के घर गया और उसकी सहायता से उस प्रश्न को भी हल कर लिया । स्कूल में जब शिक्षक ने सब लड़कों की कापियां देखी तो गोपाल कृष्ण के सभी प्रश्न सही हल किये हुए थे । यह देखकर शिक्षक उससे बहुत प्रसन्न हुए और उसको इनाम देने लगे । गोपाल कृष्ण ने इनाम नहीं लिया, इसके विपरीत वह रोने लगे । इस पर शिक्षक ने रोने का कारण पूछा । बालक गोपाल ने हाथ जोड़कर शिक्षक से कहा -“मैंने सारे प्रश्न अपने आप हल नहीं किये । मैंने एक प्रश्न अपने मित्र की सहायता से किया है । ”

.. ” बालक की इस ईमानदारी पर शिक्षक ने कहा-“अब मैं यह इनाम तुम्हारी सच्चाई पर देता हूँ ”

बाद में गोपाल कृष्ण गोखले भारत के प्रसिद्ध नेता बने ।

30. गोपाल कृष्ण दूसरे विद्यार्थी के पास किसलिए गए थे ?

- (1) हल किए प्रश्न दिखाने के लिए ।
- (2) एक प्रश्न को हल करने में सहायता पान के लिए ।
- (3) ताकि मित्र उनकी कापी से देखकर काम पूरा कर ले ।
- (4) ताकि वे उसके काम की नकल कर लें ।

30. पहले अध्यापक गोखले को इनाम क्यों देना चाहते थे ?

- (1) उसने अध्यापक की आज्ञा का पालन किया था ।
- (2) उसकी कापी बड़ी साफ- सुथरी थी ।
- (3) उसने सारे प्रश्न सही हल किए हुए दिखाए थे ।
- (4) वह उनका प्रिय शिष्य था ।

31. गोपाल कृष्ण ने इनाम क्यों नहीं लिया ? उनका विचार था कि -

- (1) वे इसके हकदार नहीं हैं ।
- (2) इतनी छोटी सी बात के लिए इनाम नहीं मिलना चाहिए ।
- (3) उनके हल किये प्रश्नों में कुछ गलत भी हो सकते हैं ।
- (4) उन्हें और अधिक काम करना चाहिए ।

32. गोपाल कृष्ण रोने क्यों लगे ?

- (1) उन्हें इनाम अच्छा नहीं लगा ।
- (2) उन्हें लगा जैसे उन्होंने अध्यापक को धोखा दिया है ।
- (3) उन्हें डर था कि उनका सच्चाप्राणी अध्यापक को सच्ची बात बता देगा ।
- (4) वह सजा मिलने से डर रहे थे ।

33. गोपाल कृष्ण के रोने से अध्यापक को कैसा लगा होगा ?

- (1) गुस्सा आया होगा
- (2) दुःख लगा होगा
- (3) दुख हुआ होगा
- (4) हैरानी हुई होगी

34. अनुच्छेद का अन्त में एक वाक्य का स्थान खाली छोड़ा गया है, इसे निम्नलिखित किस वाक्य से पूरा करना ठीक है?

- (1) मेरे इनाम पान का अधिकारी नहीं हूँ ।
- (2) मुझे यह पत्र ठीक हल करने नहीं आते थे ।
- (3) मुझे दण्ड दिया जाये ।
- (4) मुझे अक्षरगणित ठीक से नहीं आता ।

35. अन्तिम वाक्य "गाढ़ में गोपाल कृष्ण गोखले भारत के प्रसिद्ध नेता हुए" से लेखक क्या कहना चाहता है?

- (1) गोखले गणित में शुरू से ही बड़ी दिलचस्पी लेते थे ।
- (2) वे बचपन से ही नेताओं की तरह व्यवहार करते थे ।
- (3) लोग गोखले से पहले से ही प्रभावित थे ।
- (4) गोखले के गुण बचपन से ही दिख रहे थे ।

36. इस गद्यांश का सबसे अच्छा शीर्षक क्या हो सकता है ?

- (1) सदा सच बोलो
- (2) गोपालकृष्ण गोखले
- (3) मृत्युवादी बालक
- (4) सच्चाई का फल

बचपन से ही बापू के मन में छुआछूत के प्रति विद्रोह था। इनमें घर में उत्थान तथा आसन बुझाने के लिए एक छोटा सा भंगी लडका ऊका आया करता था। मोहनदास को आदेश था कि वह ऊका को न छूए। यदि कहीं मोहनदास उसे गलती से छू बैठता तो उस शुद्ध होने के लिए पुनः निर्धियत नहाना पड़ता।

मोहनदास एक बड़ा कर्तव्यनिष्ठ, रूनेही और आत्माकाश बालक था। वह ऐसा कोई काम नहीं करता था जिससे उसके माँ-बाप दुखी हो। लेकिन ऊका की बात पर वह अपने माँ-बाप या पितापिता की आज्ञा से पूर्णतया आग्रहमत था। इस विषय में उन्होंने लिखा है, मैंने अपनी माँ से कहा कि ऊका कभी भी मेरे माँ-बाप को छूना कतार टोक नहीं। यदि ऐसा सम्भवे है तो वह भला ऊका में क्यों नहीं है।

37. इस गद्यांश में -

- (1) ऊका एक लडके का नाम है।
- (2) ऊका का अर्थ है- भंगी।
- (3) ऊका एक घरेलू नौकर है।
- (4) ऊका का अर्थ है - लडका

38. मोहनदास को ऊका को न छूने का आदेश किसने दिया था?

- (1) परिवार के पुरोहित ने
- (2) गाँव के मुखिया ने
- (3) बापू ने
- (4) उसके माता-पिता ने

39. यदि मोहनदास ऊका को छू तो उसे तब

- (1) उन्हें दण्ड दिया जाता था।
- (2) माँ से डाँट पड़ती थी।
- (3) शुद्ध होने के लिए नहाना पड़ता था।
- (4) घर से बाहर भेज दिया जाता था।

40. ऊका को छूने से मोहनदास को क्यों मना किया गया था ?

- (1) ऊका ठीक कपड़े नहीं पहनता था
- (2) वह परिवार का सदस्य नहीं था
- (3) वह अच्छा लडका नहीं था
- (4) वह भंगी था

41. बचपन से ही मोहनदास -

- (1) अपने माता-पिता की बात बिल्कुल नहीं सुनता था ।
- (2) छुआछूत को नहीं मानता था ।
- (3) ऊका के साथ खेलता रहता था ।
- (4) अपनी मा से बहस करता रहता था ।

42 इस गद्यांश में 'प्रभु' शब्द का प्रयोग किसके लिए हुआ है?

- (1) नेता
- (2) राजा
- (3) भगवान्
- (4) गाव-प्रधान

43. " यदि प्रभु सबमे है तो वह भला ऊका मैं क्यों नहीं है? " इससे क्या अभिप्राय है ?

- (1) ऊका दूसरे बच्चों के जैसा ही है ।
- (2) ऊका में भगवान् नहीं है ।
- (3) ऊका भगवान् के समान है ।
- (4) ऊका एक भला लडका है ।

44 इस गद्यांश में 'बापू' किसके लिये प्रयुक्त हुआ है ?

- (1) मोहनदास
- (2) मोहनदास के पिता
- (3) ऊका के पिता
- (4) ऊका

पठनबोध (वाक्य)

इस परीक्षण के प्रत्येक प्रश्न में कुछ वाक्य या वाक्य समूह दिये हैं। उनमें किसी वाक्य में एक शब्द का स्थान खाली छोड़ दिया गया है। वाक्य के नीचे दिए चार शब्दों में से वह शब्द ढूँढें जिसे खाली स्थान पर लिखने से वाक्य अर्थपूर्ण बन जाए।

उदाहरण के लिए –

(क) कुत्ता बड़ा समझदार है।

- (1) मित्र
- (2) स्वामीभक्त
- (3) जानवर
- (4) व्यक्ति

इस वाक्य में खाली स्थान पर “जानवर” लिखने से वाक्य अर्थपूर्ण हो जाएगा। अतः (3) पर घेरा खींचा गया है।

(ख) “यही तो हम चाहते हैं, पर आपकी आज्ञा के बिना यह नहीं।”

- (1) कहीं
- (2) संभव
- (3) गलत
- (4) आवश्यक

पूरा वाक्य देखते हुए “संभव” शब्द, इस कथन को अर्थपूर्ण बनाता है। अतः (2) पर घेरा खींचा गया है।

अब इसी प्रकार बाकी प्रश्न करो।

1 आज मुन्नी का दूसरा जन्म दिन है । उसने फ्राक पहनी है ।

- (1) छोटी
- (2) बड़ी
- (3) सुन्दर
- (4) कोई

2. लगातार लड़ाई और लम्बी यात्रा से सैनिक काफी गये थे । राजकुमार ने एक जंगल में आराम के लिए पड़ाव डाल दिया ।

- (1) ऊब
- (2) उदास हो
- (3) थक
- (4) खो

3 "महाराज , लाहौर से कोई दूत आया है, कोई जरूरी लाया है ।"

- (1) भेट
- (2) काम
- (3) समाचार
- (4) सवारी

4 अधिकतर चिड़िया अपने अंडे-बच्चों की के लिए कोई कोर-कसर नहीं उठा रखतीं ।

- (1) इच्छा
- (2) आशा
- (3) सेहत
- (4) सुरक्षा

5 उन दिनों भारत वर्ष
कर रही थी ।

था । अंग्रेजी सरकार भारतवासियों पर कई प्रकार के अत्याचार

- (1) परतंत्र
- (2) स्वतंत्र
- (3) शक्तिशाली
- (4) बहुत बड़ा

6 यदि आप अच्छे हैं तो लोग ... कुछ नहीं बिगाड़ सकते ।

- (1) आपका
- (2) दूसरो का
- (3) उनका
- (4) अच्छाई का

7 बादशाह अकबर पढ़ा-लिखा न होकर भी बहुत था ।

- (1) वीर
- (2) बुद्धिमान
- (3) मेहनती
- (4) दानी

8 मैं गंजन बन गया । अब ध्यान से . . . कि किसे क्या करना है ।

- (1) पेछे
- (2) बोला
- (3) परखो
- (4) मर

9 बाढ़ में निर्धन गिरान रामदान का सब कुछ नष्ट हो गया। घर ढह गया, फसल उजड़ गई, पशु गए।

- (1) ढह
- (2) उजड़
- (3) बह
- (4) चले

10 सुरजा बिजली की सी रातों में अर एक पहाड़ी पर चढ़ने लगा।

- (1) चमक
- (2) गति
- (3) मटक
- (4) रोशनी

11 सचवाई दुनिया की वस्तु बड़ी है।

- (1) मजबूरी
- (2) मुश्किल
- (3) झंझट
- (4) ताकत

12 जब तक मैं इस का बदला नहीं लूंगा, चैन से नहीं बैठूंगा।

- (1) अगड़े
- (2) अपमान
- (3) भूख
- (4) आदर

13 छोटी टिटिहरी अपने अडे बचाने के लिए दुश्मानों को ऐसा सामान देती है कि देनाकर होती है ।

- (1) हैरानी
- (2) खुशी
- (3) तकलीफ
- (4) बेपरवाही

14 रेलगाड़ी के आते ही प्लेटफार्म पर सब गई

- (1) धूम
- (2) भागदौड़
- (3) लड़ाई
- (4) रौनक

15 कुछ पक्षी तो बिल्कुल घरेलू जैगें ही हो गये हैं ।

- (1) प्राणियों
- (2) सम्बन्धियों
- (3) औरतों
- (4) नौकरों

16 नतीजा यह हुआ कि लोग उडन-तश्तरियों के बारे में ही लगाते रहें ।

- (1) विचार
- (2) अनुमान
- (3) सपने
- (4) मजाक

Test F-3

प्राथमिक विद्यालयों के विद्यार्थियों की उपलब्धियां

कोड

स्तम्भ सं.

3

1

हिन्दी

विद्यार्थी का नाम

पिता का नाम

दिनांक

कक्षा

2-11

(1) राज्य

(2) क्षेत्र

(3) जिला

(4) शहर/कस्बा/ ब्लाक / तालुक

(5) विद्यालय का कोड

(6) विद्यार्थी का कोड

दूसरे रिकार्ड के कोड

2

12

मापन, मूल्यांकन, सर्वेक्षण एवं आधार सामग्री प्रक्रियण विभाग
राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्

श्री अरविन्द भार्गव, नई दिल्ली 110 016

शब्द-ज्ञान

इस परीक्षण में प्रत्येक पंक्ति में दो शब्द दिए हैं। पहचान लें कि इन दोनों शब्दों का अर्थ एक जैसा है या एक दूसरे से उल्टा। यदि यह शब्द समानार्थक हैं तो 'स' पर घेरा लींचो। यदि विपरीतार्थक हैं तो 'वि' पर घेरा लींचो।

उदाहरण के लिए—

(क)	सुन्दर-खूबसूरत	1	स	2	वि
(ख)	अन्दर-बाहर	1	रा	2	वि
(ग)	काला-सफेद	1	स	2	वि
(घ)	सहमति-असहमति	1	स	2	वि

सुन्दर और खूबसूरत का अर्थ लगभग एक जैसा है, इसलिए 'स' पर घेरा लींचा गया है। 'अन्दर' और 'बाहर' का अर्थ एक दूसरे से उल्टा है, इसलिए उसके आगे 'वि' पर घेरा लींचा गया है। (ग) और (घ) में भी इसी आधार पर सही उत्तर पर घेरा लींचा गया है।

अब इसी प्रकार बाकी प्रश्न करो।

टी ओ एच डी कोड 3 1

1	भयकर-डरावना	1 स	2 वि
2	चाह-इच्छा	1 स	2 वि
3	प्रकाश-अंधेरा	1 स	2 वि
4	सफल-कामयाब	1 स	2 वि
5	दुबला-मोटा	1 स	2 वि
6	देहान्त-जन्म	1 स	2 वि
7	रिक्त-खाली	1 स	2 वि
8	सम्पूर्ण-अधूरा	1 स	2 वि
9	स्पष्ट-धुंधला	1 स	2 वि
10	तृष्णा-प्यास	1 स	2 वि
11	निश्चित-तय	1 स	2 वि
12	भार्या-पत्नी	1 स	2 वि
13	षड्यन्त्र-कपटपूर्ण आयोजन	1 स	2 वि
14	सम्मान-उपेक्षा	1 स	2 वि
15	विनाश-निर्माण	1 स	2 वि
16	निर्दयी-अत्याचारी	1 स	2 वि
17	महान-तुच्छ	1 स	2 वि
18	उगित-ठीक	1 स	2 वि
19	घ्वज-झंडा	1 स	2 वि
20	बदनाम-प्रसिद्ध	1 स	2 वि

21	चौकस-लापरवाह	1 स	2 वि
22	परिचित-अनजान	1 स	2 वि
23	दायित्व-जिम्मेदारी	1 स	2 वि
24	व्यवस्था-प्रबन्ध	1 स	2 वि
25	परिश्रमी-आलसी	1 स	2 वि
26	निगुण-कुशल	1 स	2 वि
27	दुर्लभ-सामान्य	1 स	2 वि
28	कृपण-कजूस	1 स	2 वि
29	परिस्थिति-हालत	1 स	2 वि
30	अवाक्-भौचक्का	1 स	2 वि
31	शीतल-उष्ण	1 स	2 वि
32	मंदबुद्धि-बुद्धिमान	1 ग	2 वि
33	शिला-पाषाण	1 स	2 वि
34	अनावश्यक-जरूरी	1 स	2 वि
35	सक्षम-असमर्थ	1 स	2 वि
36	आकर्षण-सिचाव	1 स	2 वि
37	सम्पन्न-गरीब	1 स	2 वि
38	प्रतिज्ञा-प्रण	1 स	2 वि
39	विक्रय-खरीदना	1 स	2 वि
40	खिन्न-प्रसन्न	1 स	2 वि

उपयुक्त शब्द

इस परीक्षण में एक छोटी कहानी है। कहानी के वाक्यों में कहीं-कहीं एक शब्द खोया दिया गया है। विषय और लिखने के ढंग को ध्यान में रखते हुए दिए हुए चार शब्दों में से उपयुक्त शब्द चुनिए और उसके क्रमांक पर घेरा खींचो।

उदाहरण के लिए-

(क) मेरे _____ हर रोज प्रातः 9 बजे दफ्तर जाते हैं।

- (1) बाप
- (2) जनक
- (3) पिताजी
- (4) फादर

यहां पर 'पिताजी' सबसे उचित जान पड़ता है। दिए हुए चारों शब्द पिता के लिए ही आते हैं, परन्तु लिखने में 'पिताजी' ही उचित जान पड़ता है। अतः '(3)' पर घेरा खींचा गया है।

(ख) हल्की-हल्की हवा चल रही है, मौसम बड़ा..... हो गया है।

- (1) सुन्दर
- (2) सुहावना
- (3) लुभावना
- (4) सूबसूरत

इन चारों शब्दों में 'सुहावना' अधिक उचित है, अतः '(2)' पर घेरा लगाया गया है।

अब इसी प्रकार बाकी प्रश्न करो।

टी ओ एच, डमी कोड

3

2

- 1 कहा जाता है कि मोर सबसे सुन्दर पक्षी है। लेकिन बहुत समय पहले मोर इतना नहीं था।
 - (1) प्रिय
 - (2) शक्ति
 - (3) लम्बाई
 - (4) सुन्दर
- 2 अतीत काल में जन में बहुत से पशु-पक्षी रक्षा करते थे।
 - (1) बाघ
 - (2) शूरा
 - (3) पशु
 - (4) शक्ति
- 3 एक दिन एक परी जंगल में आई और पशु-पक्षियों से बोली आप में से जो कोई अपना को अद्वैत समझता है उसे मैं अपना मित्र बना दूँगी।
 - (1) अद्वैत
 - (2) काम
 - (3) प्रिय
 - (4) मोक्ष
- 4 एक पशु-पक्षी चूँ रहे और एक दूसरे का मुँह ताकने लगे। परी ने बन्दर की ओर दृष्टि। बन्दर ने बड़े गर्व से कहा मैं तो काफी सुन्दर हूँ। मोड़ का मुँह बहुत लम्बा है। आप उसे सुन्दर बना दें।
 - (1) जब
 - (2) फिर भी
 - (3) पर
 - (4) यदि

5 यह सुनकर घोड़े ने गुस्से में बन्दर को मारी।

- (1) पूँछ
- (2) आपड़
- (3) पीठ
- (4) दुलर्नी

6 और कहने लगा, "मैं बहुत सुन्दर हूँ। लेकिन हाथी भारी की नज़रों में बर्खी है। आप उसकी मदद कर दें।"

- (1) पूँछ
- (2) सूँड
- (3) नाक
- (4) तउ भी

7 हाथी गुस्सा में था और बोला, "मैं ही उठा और बाता दगा ता, मोर कितना बड़सूरत है, अम्हण हाथी की मदद करे।"

- (1) मस्त
- (2) पोला
- (3) आगबबूला
- (4) बहरी

8 यह सुनकर मोर बहुत खुश हुआ और कहने लगा, "मेरी पूँछ के पंख बहुत खेद और सुन्दर बना दें।"

- (1) लम्बे
- (2) अलग-अलग
- (3) डराने
- (4) भद्दे

9 मोर ने मोर को पूँछ के पंख दिए और उनकी जगह सुन्दर फूल लगा दिए।

- (1) आपड़
- (2) आप
- (3) पिर
- (4) फल

- 10 उसके बाद परी ने 1 फूँक जिससे मोर बहुत खूबसूरत बन गया।
- (1) फूँक
 - (2) मार
 - (3) लगा
 - (4) दी
- 11 सब पक्षी एक से प्रशंसा करने लग, 'क्यों कितने सुन्दर पक्ष है।'
- (1) स्वर
 - (2) बोली
 - (3) आवाज़
 - (4) गले
- 12 मोर जहाँ कहीं भी सुन्दर पक्ष वाले किर्गी को देखता, उसके अपनी सुन्दरता की तुलना करने लगता।
- (1) प्राणी
 - (2) जीव
 - (3) जन्तु
 - (4) पक्षी
- 13 एक दिन मोर अन्य का किनारे रहा था।
- (1) भाग
 - (2) प्रचर
 - (3) भूग
 - (4) आ-जा
- 14 अचानक उसे पानी में एक सुन्दर पक्ष बना पक्षी देखा जो उसका अपना मुकाबला करने लगा।
- (1) उसे
 - (2) उससे
 - (3) तिरंगे
 - (4) तन्वीर से

- 15 उस पक्षी ने भी अपने पख फैला रखे थे। और गुस्से से उस पर लेकिन झील में गिर पड़ा।
- (1) पहुँचा
 - (2) बढ़ा
 - (3) झपटा
 - (4) गिरा
- 16 मोर को तैरना नहीं आता था, वह डूबना लगा। तभी उसे एक की जड़ पानी में दिखाई दी, जिसे पकड़कर वह बड़ी मुश्किल से बाहर निकला।
- (1) पौधे
 - (2) पद
 - (3) आली
 - (4) घाग
- 17 किनारे आने , उसने एक राजर खील में मली।
- (1) पर
 - (2) पीछे
 - (3) के ऊपर
 - (4) के बाद
- 18 यह देखकर मोर बहुत खुश हुआ कि पानी के पक्षी के पख भीग गए हैं और बंदसूरत लग रहा है।
- (1) प्राणी
 - (2) यह
 - (3) वह
 - (4) परिन्दा
19. झील के किनारे, एक पेड़ पर बैठा नीलकंठ यह सब देख रहा था। वह से हँस पड़ा।
- (1) जोर
 - (2) सिलखिला
 - (3) ऊँचे
 - (4) उहाके

20 उसकी हँसी पर मोर को बहुत गुस्सा आया। वह कहने लगा, "बदसूरत नीलकंठ, क्यो हँस रहा है?"

- (1) आप
- (2) तुम
- (3) यह
- (4) तू

21 नीलकंठ, "मैं तुझ पर हँस रहा हूँ।"

- (1) बोला
- (2) पुकारा
- (3) कहा
- (4) चिल्लाया

22. पानी में अभी जिस पक्षी को तू देख रहा था, "वह और कोई नहींतेरी ही परछाई थी।"

- (1) बल्कि
- (2) परन्तु
- (3) किन्तु
- (4) फिर भी

23. मोर सिर झुकाकर अपने पंख देखने लगा, जो भीगे हुए थे और बदसूरत लग रहे थे। तब..... के मारे उसका चेहरा लाल हो गया।

- (1) सकोच
- (2) शर्म
- (3) दुख
- (4) हया

24 और उसने तय कर लिया कि आगे से अपनी खूबसूरती पर..... नहीं करेगा।

- (1) शर्त
- (2) गर्व
- (3) शेखी
- (4) घमंड

प्राथमिक विद्यालयों के विद्यार्थियों की उपलब्धियां

कोड

स्तम्भ सं०

4

हिन्दी

विद्यार्थी का नाम

पिता का नाम

दिनांक .. कक्षा

- | | |
|-------------------------------------|----------------------|
| (1) राज्य | <input type="text"/> |
| (2) क्षेत्र | <input type="text"/> |
| (3) जिला | <input type="text"/> |
| (4) शहर/कस्बा/ ब्लॉक / तालुका | <input type="text"/> |
| (5) विद्यालय का कोड | <input type="text"/> |
| (6) विद्यार्थी का कोड | <input type="text"/> |

मापन, मूल्यांकन, सर्वेक्षण एवं आधार सामग्री प्रक्रियण विभाग
राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्

श्री अरविन्द मार्ग, नई दिल्ली 110 016

वाक्य-संरचना

नीचे प्रत्येक प्रश्न में एक वाक्य चार तरह से लिखा हुआ है। इन चारों में केवल एक ही शुद्ध रूप में लिखा है। शुद्ध रूप में लिखे वाक्य के क्रमांक पर घेरा खींचो।

उदाहरण के लिये -

- (1) राम पानी पिलाने ले गया अपनी भूरी गाय को।
- (2) अपनी भूरी गाय को पानी पिलाने राम ले गया।
- (3) राम अपनी भूरी गाय को पानी पिलाने ले गया।
- (4) राम पानी पिलाने अपनी भूरी गाय को ले गया।

इन सब में तीसरा वाक्य शुद्ध है, अतः उसके क्रमांक पर घेरा बनाया गया है।

अब इसी प्रकार बाकी प्रश्नों के उत्तर दो।

1.
 - (1) उनका देखते ही स्वरूप मेरी आँखों में आँसू आ गए ।
 - (2) मेरी आँखों में आँसू आ गए उनका स्वरूप देखते ही ।
 - (3) उनका स्वरूप देखते ही मेरी आँखों में आँसू आ गए ।
 - (4) मेरी आँखों में आ गए आँसू उनका स्वरूप देखते ही ।

2.
 - (1) राम और श्याम बाहर गेद से खेल रहे हैं ।
 - (2) राम श्याम और बाहर गेद से खेल रहे हैं ।
 - (3) राम और श्याम गेद बाहर से खेल रहे हैं ।
 - (4) गेद राम और श्याम खेल रहे हैं बाहर से ।

3.
 - (1) जन्म हुआ दो हजार पाँच सौ वर्ष पहले सिद्धार्थ का ।
 - (2) दो हजार पाँच सौ वर्ष पहले सिद्धार्थ का जन्म हुआ ।
 - (3) दो हजार पाँच सौ वर्ष पहले जन्म हुआ सिद्धार्थ का ।
 - (4) सिद्धार्थ का हुआ जन्म दो हजार पाँच सौ वर्ष पहले ।

4.
 - (1) तुरत मेड़ खेत की ठीक करने के लिए आरूणि चल पड़ा ।
 - (2) आरूणि खेत की मेड़ ठीक करने के लिए आरूणि चल पड़ा ।
 - (3) तुरत खेत की ठीक करने के लिए तुरन्त मेड़ चल पड़ा ।
 - (4) ठीक करने के लिए मेड़ खेत की आरूणि तुरन्त चल पड़ा ।

5.
 - (1) घण्टों गुमसुम बैठा रहता सिद्धार्थ ।
 - (2) सिद्धार्थ घण्टों बैठा रहता सिद्धार्थ गुमसुम ।
 - (3) गुमसुम बैठा रहता सिद्धार्थ घण्टों ।
 - (4) सिद्धार्थ घण्टों गुमसुम बैठा रहता ।

- 6 (1) जीवन मे दुख सुख तो आते ही रहते हैं ।
 (2) दुख सुख तो जीवन में ही आते रहते है ।
 (3) आते ही रहते है दुख सुख जीवन में ।
 (4) जीवन मे आते रहते है दुख सुख ही तो ।
7. (1) नींद उचट गई उसकी रात मे सोते-सोते ।
 (2) रात मे सोते-सोते गई नींद उचट उसकी ।
 (3) सोते-सोते उचट गई नींद उसकी रात मे ।
 (4) रात मे सोते-सोते उसकी नींद उचट गई ।
- 8 (1) वर्षा ऋतु मे नदी में पानी बहुत बढ़ जाता है ।
 (2) नदी मे पानी वर्षा ऋतु मे बहुत बढ़ जाता है ।
 (3) बहुत बढ़ जाता है नदी मे पानी वर्षा ऋतु मे ।
 (4) वर्षा ऋतु में बहुत बढ़ जाता है नदी में पानी ।
9. (1) यह कागज़ कूड़ेदान मे फेक आओ ।
 (2) कागज कूड़ेदान मे यह फेंक आओ ।
 (3) कागज यह कूड़ेदान में फेक आओ ।
 (4) कागज़ कूड़ेदान में फेक आओ यह ।
10. (1) आज है भैया का जन्मदिन ।
 (2) आज जन्मदिन है भैया का ।
 (3) आज भैया का जन्मदिन है ।
 (4) जन्मदिन भैया का आज है ।
- 11 (1) पूरी अपनी पुस्तक पढ़ ली है मैंने ।
 (2) अपनी पुस्तक पूरी पढ़ ली है मैंने ।
 (3) मैंने अपनी पुस्तक पूरी पढ़ ली है ।
 (4) मैंने पूरी पढ़ ली है पुस्तक अपनी ।

- 12 (1) रावण का वध किया राम ने ।
(2) राम ने वध किया रावण का ।
(3) वध किया राम ने रावण का ।
(4) राम ने रावण का वध किया ।
- 13 (1) आज घूमने मेरा मन जाने का हो रहा है ।
(2) आज मेरा मन घूमने जाने का हो रहा है ।
(3) आज मेरा घूमने मन जाने का हो रहा है ।
(4) घूमने मन जाने का मेरा आज हो रहा है ।
- 14 (1) हाथ-जोड़े सेवा में उनकी नौकर-चाकर खड़े रहते थे ।
(2) नौकर-चाकर उनकी सेवा में हाथ जोड़े खड़े रहते थे ।
(3) सेवा में उनकी नौकर-चाकर हाथ जोड़े खड़े रहते थे ।
(4) उनकी हाथ जोड़े सेवा में नौकर-चाकर खड़े रहते थे ।
- 15 (1) और धीरे-धीरे पानी बरस रहा था आषाढ़ का महीना था ।
(2) धीरे-धीरे आषाढ़ का महीना था और पानी बरस रहा था ।
(3) आषाढ़ का महीना था और पानी धीरे-धीरे बरस रहा था ।
(4) आषाढ़ का महीना था धीरे-धीरे और पानी बरस रहा था ।

- 16 (1) तेनालीराम का जादू चल गया मंत्री पर ।
(2) मंत्री पर तेनालीराम का जादू चल गया ।
(3) मंत्री पर चल गया तेनालीराम का जादू ।
(4) जादू चल गया तेनालीराम का मंत्री पर ।

- 17 (1) चलो कुछ बाजार से सामान लाया जाए ।
(2) चलो बाजार से कुछ सामान लाया जाए ।
(3) चलो बाजार से सामान कुछ लाया जाए ।
(4) कुछ चलो बाजार से सामान लाया जाए ।

- 18 (1) बजते ही घंटी विद्यालय में बच्चे भाग खड़े हुए ।
(2) भाग खड़े हुए बच्चे विद्यालय में घंटी बजते ही ।
(3) विद्यालय में घंटी बजते ही बच्चे भाग खड़े हुए ।
(4) बच्चे भाग खड़े हुए, विद्यालय में बजते ही घंटी ।

वर्तनी परीक्षण

इस परीक्षण में एक शब्द चार प्रकार में लिखा गया है। वर्तनी की दृष्टि से जो शब्द सही हम से लिखा गया है उसके अंक पर घेरा लगाओ।

उदाहरण के लिये -

(1) पूर्ण

(2) पूर्ण

(3) पूर्ण

(4) पूर्ण

इस भाग में दूसरे क्रमांक पर लिखे "पूर्ण" की वर्तनी सही है, अतः उस पर घेरा खींचा गया है। इस प्रकार प्रत्येक पंक्ति में दिए गए शब्दों में सही वर्तनी वाले शब्द पर घेरा खींचो।

1	(1) पृष्ठ	(2) परिष्ठ	(3) प्राष्ठ	(4) पृष्ठ
2	(1) परधान	(2) प्रधान	(3) पृधान	(4) प्रधान
3	(1) परिश्रम	(2) परीश्रम	(3) पीरश्रम	(4) परीस्रम
4	(1) पृश्न	(2) परश्न	(3) परशन	(4) प्रश्न
5	(1) पत्नि	(2) पतनी	(3) पत्नी	(4) पतनि
6	(1) रूपैया	(2) रुपया	(3) रूपया	(4) रूपिया
7	(1) सवतन्त्रता	(2) स्वतन्त्रता	(3) सव्तन्त्रता	(4) स्वतन्त्रता
8	(1) राष्ट्र	(2) राषट्र	(3) राषट्र	(4) राष्ट्र
9	(1) अनीवार्य	(2) अनिवार्य	(3) अनिर्वार्य	(4) अनीर्वार्य
10	(1) अतीथि	(2) अतिथि	(3) अतिथी	(4) अतीथी
11	(1) सहायता	(2) सहयता	(3) साहयता	(4) साहायता
12	(1) ग्यारह	(2) गियारा	(3) ग्यारह	(4) इग्यारह
13	(1) विद्यालय	(2) विद्यालय	(3) विद्यालय	(4) विधाला
14	(1) ध्वज	(2) धव्ज	(3) ध्वज	(4) ध्वज
15	(1) उन्नीस	(2) उत्नीस	(3) उन्नीस	(4) उन्निस
16	(1) दूरदर्शन	(2) दूरदर्शन	(3) दूरदर्शन	(4) दुरदर्शन
17	(1) आकर्षण	(2) आकर्षण	(3) आकर्षण	(4) आकर्षण
18	(1) पंक्ति	(2) पंक्ति	(3) पंक्ति	(4) पगस्ती
19	(1) परतीक्षा	(2) प्रतीक्षा	(3) प्रतीक्षा	(4) प्रतीक्षा
20	(1) आशीष	(2) आशीश	(3) आशीश	(4) अशीष
21	(1) ग्रीष्म	(2) ग्रीष्म	(3) गरीष्म	(4) गृीष्म
22	(1) आदर्श	(2) आदर्श	(3) आदर्श	(4) आदर्श
23	(1) रीती	(2) रीति	(3) रिति	(4) रिति
24	(1) प्रशंसा	(2) प्राशंसा	(3) प्रसंसा	(4) प्रशंसा
25	(1) आजादी	(2) अजादी	(3) आजदी	(4) आजदि

Questionnaire F-5

प्राथमिक विद्यालयों के विद्यार्थियों की उपलब्धियां

कोड

स्तम्भ सं०

5

छात्र प्रश्नावली

विद्यार्थी का नाम

पिता अथवा अभिभावक का नाम

दिनांक कक्षा

पाठशाला का नाम

केवल प्रोजेक्ट फैलो ही इसे भरे

(1) राज्य

2-3

(2) क्षेत्र

4

(3) जिला.....

5

6-7

(4) शहर/कस्बा/ ब्लाक / तालुक

8-9

(5) विद्यालय का कोड

10-11

(6) विद्यार्थी का कोड

कोड 3 रिकार्ड का कोड

12-13-14

एस टी क्यू डमी कोड

5 0

मापन, मूल्यांकन, सर्वेक्षण एवं आधार सामग्री प्रक्रियण विभाग

राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्

श्री अरविन्द मार्ग, नई दिल्ली 110 016

कक्षा अध्यापक एवं प्रोजेक्ट फैलो इस प्रश्नावली के भरने में विद्यार्थियों की सहायता करें।

7. तुम किस इलाके में रहते हो? 15
- | | | | |
|---------|---|----------|--|
| शहरी | 1 | () | |
| ग्रामीण | 2 | () | |
8. विद्यार्थी की आयु (वर्षों में) 16-17
9. तुम बालक हो या बालिका ? 18
- | | | | |
|--------|---|----------|--|
| बालक | 1 | () | |
| बालिका | 2 | () | |
10. तुम किस कक्षा में पढ़ते हो? 19
- | | | | |
|-------|---|----------|--|
| कक्षा | 4 | () | |
| कक्षा | 5 | () | |
11. तुम्हारे पिताजी क्या काम करते हैं?
यदि तुम्हारे पिता जीवित हैं तो अभिभावक का व्यवसाय बताओ। 20
-
12. तुम जिस जाति के हो उसपर सही का निशान लगाओ। 21
- | | | | |
|-----------------|---|----------|--|
| अनुसूचित जाति | 1 | () | |
| अनुसूचित जनजाति | 2 | () | |
| पिछड़ी जाति | 3 | () | |
| अन्य जाति | 4 | () | |

प्रश्न संख्या 11 प्रश्नावली के अन्त में कोड की हुई व्यवसायों की सूची दी गई है। अध्यापक एवं प्रोजेक्ट फैलो विद्यार्थी को अपने पिता अथवा अभिभावक के व्यवसाय का उचित कोड चुनकर भरने में मदद करें।

13 क्या तुम्हारे घर में बोली जाने वाली भाषा वही है
जिस भाषा में तुम्हें पढ़ाया जाता है या कोई दूसरी?

22

वही	1	()
दूसरी	2	()

14. कक्षा एक में दाखिल होने से पहले क्या तुम किसी
स्कूल में गये हो ?

23

हां	1	()
नहीं	2	()

15 अपने माता-पिता अथवा अभिभावक के शिक्षा स्तर
पर सही का निशान लगाओ।

24-25

शिक्षा स्तर	पिता अथवा अभिभावक	माता
अनपढ़	1 ()	1 ()
प्राथमिक	2 ()	2 ()
कक्षा दस से कम	3 ()	3 ()
दसवी कक्षा तक	4 ()	4 ()
उच्च माध्यमिक	5 ()	5 ()
(11 या 12 पास)		
बी ए/बी एस सी/		
बी कॉम आदि	6 ()	6 ()
एम ए/ एम एस सी/		
एम कॉम/ डॉक्टर/		
इंजीनियर आदि	7 ()	7 ()

16 तुम्हें मिलाकर तुम कितने भाई बहन हो ?

26

एक से दो	1	()
तीन से चार	2	()
चार से अधिक	3	()

17 क्या घर में तुम्हारा कमरा अथवा कोई अन्य स्थान है जहाँ बैठकर तुम पढ़ सकते हो? 27

हाँ	1	()
नहीं	2	()

18 स्कूल से मिला गृह कार्य करने में क्या तुम्हारे परिवार का कोई सदस्य तुम्हारी मदद करता है ? 28

हाँ	1	()
नहीं	2	()

19. क्या तुम्हारे पास पाठ्य-पुस्तकें हैं ? 29

हाँ, मेरे पास अधिकतर पुस्तकें हैं।	1	()
मेरे पास कुछ पुस्तकें हैं।	2	()
मेरे पास बहुत थोड़ी पाठ्य-पुस्तकें हैं	3	()

20 क्या तुम्हें कविताएँ और अन्य लिखने की सामग्री मिल जाती है?

निम्नलिखित में से जो तुम्हारे विषय में ठीक हो उस पर सही (✓) का निशान लगाओ। 30

हाँ, काफी मिल जाती है।	1	()
कुछ मिल जाती है।	2	()
बहुत थोड़ी मिल पाती हैं।	3	()

21 तुम प्रतिदिन कितने घंटे, घर, खेत या दुकान पर अपने माता-पिता की सहायता करते हो?

31

- | | | |
|------------------------|---|----------|
| दो घंटे से कम | 1 | () |
| दो घंटे से चार घंटे तक | 2 | () |
| चार घंटे से अधिक | 3 | () |

22. क्या तुम नियमित रूप से स्कूल जाते हो ?

2

- | | | |
|--------------------------------|---|----------|
| हां, लगभग सब दिन | 1 | () |
| कभी कभी छुट्टी करनी पड़ती है। | 2 | () |
| बहुत बार छुट्टी करनी पड़ती है। | 3 | () |

23 क्या तुम्हारे घर में समाचार पत्र आता है?

33

- | | | |
|------|---|----------|
| हाँ | 1 | () |
| नहीं | 2 | () |

24 क्या तुम्हारे घर पर पत्रिकाएँ आती हैं?

34

- | | | |
|------|---|----------|
| हाँ | 1 | () |
| नहीं | 2 | () |

25 यदि तुम्हारे घर में पाठ्य-पुस्तकों के अतिरिक्त दूसरी पुस्तकें भी हैं तो निम्नलिखित में से जो तुम्हारे विषय में ठीक हो उस पर सही (✓) का निशान लगाओ।

35

- | | | |
|---------------------------------------|---|----------|
| मेरे घर में और कोई पुस्तकें नहीं हैं। | 1 | () |
| 20 से कम पुस्तकें हैं। | 2 | () |
| 20 से 50 पुस्तकें हैं। | 3 | () |
| 50 से 100 पुस्तकें हैं। | 4 | () |
| 100 से अधिक पुस्तकें हैं। | 5 | () |

26 क्या तुम पाठ्य-पुस्तको के अतिरिक्त और दूसरी पुस्तके भी पढ़ते हो?

36

नहीं	1	()
कुछ	2	()
बहुत सी	3	()

27 इतवार को छोड़ शेष दिनों में तुम प्रतिदिन कितने घंटे टी वी देखाते हो?

37

मेरे घर में टी वी नहीं है।	1	()
एक घंटे से कम	2	()
एक से दो घंटे	3	()
दो घंटे से अधिक	4	()

व्यवसायों की सूची

कोड संख्या

व्यवसाय

- | | |
|----------------------------------|--|
| 1. व्यावसायिक | डाक्टर, इंजीनियर, अध्यापक, लाइब्रेरियन, वैज्ञानिक, लेखक, लेखाकार, कलाकार। |
| 2. प्रशासनिक अधिकारी
(वरिष्ठ) | राजपत्रित अधिकारी, रक्षा सेवाओं के अधिकारी, कारबारी अधिकारी, पुलिस अधिकारी, प्रशासनिक अधिकारी। |
| 3 व्यापारी | छोटे बड़े व्यापारी, थोक विक्रेता, ठेकेदार, कुकानदार। |
| 4. कृषक | छोटे कृषक, बड़े जमींदार। |
| 5 प्रशासनिक अधिकारी
(कनिष्ठ) | विक्रेता, क्लर्क टाइपिस्ट, स्टैनो-टाइपिस्ट, खजांची, कडक्टर, बीमा क्लर्क, कम्पाउंडर, नर्स, सर्वेयर। |
| 6 कुशल कारीगर | मेकैनिक, चालक, राज, प्लम्बर, फोटोग्राफर, पेटर, शिल्पकार, टेलीफोन/मशीन आप्रैरेटर, मोची, कुम्हार, लुहार, बढई, जुलाहा, दर्जी, रंगई कर्मी। |
| 7. अकुशल कारीगर | मजदूर, चौकीदार, माली, खोमचे वाला। |
| 8. अन्य | ऊपर लिखे हुये व्यवसायों के अतिरिक्त जो अन्य व्यवसायों में लगे हुये हैं या बिना काम के हैं। |

Questionnaire F-6

प्राथमिक विद्यालयों के विद्यार्थियों की उपलब्धियां

कोड

स्तम्भ सं०

6

1

अध्यापक प्रश्नावली

विद्यार्थी का नाम

पिता का नाम

दिनांक

(1) राज्य

--	--

(2) क्षेत्र

--

(3) जिला

--

(4) शहर/कस्बा/ ब्लॉक / तालुका

--	--

(5) विद्यालय का कोड

--	--

(6) अध्यापक का कोड

--	--

--

पहले रिकार्ड का कोड

1

11

मापन, मूल्यांकन, सर्वेक्षण एवं आधार सामग्री प्रक्रियण विभाग
राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्

श्री अरविन्द मार्ग, नई दिल्ली . 110 016

निम्नलिखित प्रश्नों में आपसे अथवा आपके काम से सम्बन्धित जानकारी प्राप्त करने के लिए कई प्रश्न पूछे गए हैं। प्रश्नों के उत्तर उपयुक्त स्थान पर सही (✓) का निशान लगाकर दें।

टी. क्यू डब्ल्यू कोड

6

1

12-13

भाग-अ

7. आपका स्कूल किस क्षेत्र में है ?

14

शहरी अथवा ग्रामीण

शहरी 1()

ग्रामीण 2()

8. लिंग

15

पुरुष 1()

स्त्री 2()

9 आयु

16

35 वर्ष से कम 1()

35 वर्ष से 50 वर्ष तक 2()

50 वर्ष से अधिक 3()

10 आपने कहां तक शिक्षा प्राप्त की है?

17

कक्षा दस से कम 1()

कक्षा दस तक 2()

कक्षा बारह तक 3()

बी ए, बी एस सी, बी काम 4()

या उससे अधिक

11 अध्यापन सम्बन्धी आपका प्रशिक्षण क्या है?

18

यदि आपने प्रशिक्षण सम्बन्धी दो योग्यताएं प्राप्त की हैं तो उच्चतर योग्यता के सामने सही (✓) का निशान (केवल एक ही) लगाएं।

- | | |
|-------------------------------------|------|
| जे बी टी या इसके बराबर
(एक वर्ष) | 1() |
| जे बी टी या इसके बराबर
(दो वर्ष) | 2() |
| बी. एड (एक वर्ष) | 3() |
| बी एड (चार वर्ष) | 4() |
| अन्य कोई | 5() |

12 आप कितने वर्षों से पढा रहे है ?

19

- | | |
|-----------------|------|
| 5 वर्ष से कम | 1() |
| 5 से 10 वर्ष | 2() |
| 11 से 20 वर्ष | 3() |
| 20 वर्ष से अधिक | 4() |

13 आपकी शिक्षा कहा हुई ?

20-22

	ग्रामीण	कस्बा	शहर
(1) प्राथमिक	[]	[]	[]
(2) माध्यमिक/ उच्चतर माध्यमिक	[]	[]	[]
(3) व्यावसायिक	[]	[]	[]
सही निशानों की कुल संख्या (1-3)	<input type="text"/>	<input type="text"/>	<input type="text"/>

14 अभी तक आपने अधिकतर कहाँ पढ़ाया है?

23

ग्रामीण क्षेत्र में 1()

कस्बे/छोटे शहर में 2()

बड़े शहर या महानगर में 3()

15 *क्या आपने कोई सेवा-कालीन प्रशिक्षण प्राप्त किया है?

24

हां 1()

नहीं 2()

16 यदि हा, तो निम्नलिखित तालिका में विवरण दीजिए .

25-30

क्रम संख्या	विषय	सेवाकालीन प्रशिक्षणों की संख्या	कुल अवधि (दिनों में)
1	हिन्दी		<input type="text"/>
2	गणित		<input type="text"/>
3	अन्य		<input type="text"/>

17 नीचे कुछ विषय दिए गए हैं जिन विषयों में पढ़ाने में आपकी सबसे अधिक रुचि हो उसको आप रैंक 'एक' दीजिए, फिर उससे कम रुचि वाले विषयों को 'दो' रैंक दीजिए। इस प्रकार आप सभी विषयों को अपनी (पसंद) रुचि के अनुसार रैंक कर दीजिए। तीसरे कालम में उस विषय को पढ़ाने के पीरियड (प्रति सप्ताह) की संख्या लिखें। 31-42

क्रम संख्या	विषय	रैंक	कुल पीरियडों की संख्या (प्रति सप्ताह)
1	हिन्दी	<input type="text"/>	<input type="text"/>
2	गणित	<input type="text"/>	<input type="text"/>
3	सामाजिक अध्ययन	<input type="text"/>	<input type="text"/>
4	सामान्य विज्ञान	<input type="text"/>	<input type="text"/>

*प्रश्न संख्या 15 सेवाकालीन प्रशिक्षण से आशय उन लघु पाठ्यक्रमों की ट्रेनिंग से है जो समय-समय पर अध्यापकों का अपने शिक्षण को अधिक समृद्ध बनाने हेतु दिए जाते हैं।

18 घर से पाठशाला आने और जाने (दोनों को मिलाकर) में आपको कितना समय लगता है ?

- | | | |
|---------------------------------|---|-----------|
| आधा घंटा या उससे कम | 1 | () |
| आधे घंटे से अधिक, एक घंटे से कम | 2 | () |
| एक घंटे से अधिक, दो घंटे से कम | 3 | () |
| दो घंटे से अधिक, तीन घंटे से कम | 4 | () |
| तीन घंटे से अधिक | 5 | () |

भाग-ब

नीचे दिए गए प्रश्न पढ़ाने/सीखने की प्रक्रिया के बारे में है। आप अपने प्रशिक्षण के अनुभव के आधार पर इन प्रश्नों का सही और स्पष्ट उत्तर दीजिए।

1. क्या आपने अध्यापन की पुरानी पद्धति को
छोड़कर किसी नए ढंग से पढ़ाने की कोशिश
की है? 46

हां 1 ()
नहीं 2 ()

- 2 यदि आपका उत्तर हां में है तो क्या -
(अ) विद्यार्थियों की शैक्षिक उपलब्धियां
बढ़ी ? 47

हां 1 ()
नहीं 2 ()

- (ब) विद्यार्थी पढ़ने में अधिक रुचि लेने लगे ? 48

हां 1 ()
नहीं 2 ()

- 3 क्या आप पुस्तकों के अतिरिक्त कोई अन्य
शिक्षण सामग्री इस्तेमाल करते हैं? 49

हां, प्रायः 1 ()
हां, कभी-कभी 2 ()
बहुत कम 3 ()

- 4 क्या आपने कभी अपनी कक्षा में इस्तेमाल
करने के लिए कोई शिक्षण सामग्री बनाई है? 50

हां, बहुत कुछ 1 ()
हां, कुछ 2 ()
नहीं, समय नहीं मिलता
या
स्कूल से सामान नहीं मिलता 3 ()

5 क्या आपने कभी विद्यार्थियों से शिक्षण-सामग्री बनवाई है ? 51

हां, कभी कभी 1 ()

नहीं, विद्यार्थी बहुत छोटे हैं 2 ()

या

सामग्री नहीं मिलती

6. आप विद्यार्थियों की उपलब्धियों का मूल्यांकन साल में कितनी बार करते हैं ? 52

एक बार (वार्षिक) 1 ()

दो या तीन बार (त्रैमासिक) 2 ()

प्रतिमास या इससे अधिक 3 ()

7 मूल्यांकन का प्रयोग किसलिए 53
किया जाता है? यदि आवश्यक हो तो एक से अधिक
बार निशान लगाए।

i) विद्यार्थियों को अगली कक्षा में भोजने के लिए या पास करने के लिए []

ii) विद्यार्थियों की कमियां जानने के लिए []

iii) पढ़ाने में कमियां जानने के लिए []

सही निशानों की

कुल संख्या (i-iii)

8 पाठ्य-पुस्तकों के अतिरिक्त आप क्या-क्या पढ़ पाते हैं ? 54-56

पाठ्य सामग्री	नियमित रूप से	कभी-कभी	बहुत कम
1 समाचार पत्र	[]	[]	[]
2. सामान्य पत्रिकाएं	[]	[]	[]
3 कहानी उपन्यास, कविता, नाटक आदि	[]	[]	[]
4. व्यवसाय सम्बन्धी पत्रिकाएं	[]	[]	[]
सही निशानों की कुल संख्या	[]	[]	[]

9	क्या आपके पास पाठ्य पुस्तके है ?			57
	हां, अपनी प्रतिया ।	1	()	
	हां, लायब्रेरी की पुस्तके ।	2	()	
	नहीं, मैं विद्यार्थियों से मांग लेता हूँ ।	3	()	
10	क्या आपके पास हिन्दी का शब्द-कोष है?			58
	हां, मेरे पास अपना है	1	()	
	हां, विद्यालय में उपलब्ध है	2	()	
	मुझे शब्द-कोष उपलब्ध नहीं है	3	()	
11	आप पढ़ने में कमजोर विद्यार्थियों की सहायता किस प्रकार करते हैं ?			59
	कक्षा में विशेष ध्यान देकर	1	()	
	या			
	स्कूल की छुट्टी के बाद अलग से पढ़ाकर			
	माता-पिता द्वारा उनके बच्चों	2	()	
	के ट्यूशन का प्रबंध करवा कर			
12	क्या आप बच्चों को दिया गृह कार्य जांचते हैं?			60
	नियमित रूप से	1	()	
	कभी-कभी	2	()	
	बहुत कम, समय नहीं मिलता	3	()	
13	क्या आपकी कक्षा में बच्चे प्रश्न पूछते हैं ?			61
	हां, कई बार	1	()	
	कभी-कभी पूछते हैं	2	()	
	बहुत कम	3	()	

भाग-स

निम्नलिखित कथनों में प्राइमरी कक्षाओं में पढ़ाने से संबंधित कुछ कथन दिए हुए हैं। प्रत्येक कथन पढ़कर सोचिए आप इससे सहमत हैं या असहमत। यदि आप कथन से सहमत हैं तो (1) पर सही (✓) का निशान लगाए और असहमत हैं तो (2) पर सही (✓) का निशान लगाएं।

	सहमत	असहमत
1 प्राइमरी स्कूल में पढ़ाना अच्छा है, इसमें कम काम करना पड़ता है।	1 ()	2 ()
2 समाज में प्राइमरी अध्यापक की अच्छी प्रतिष्ठा है।	1 ()	2 ()
3 प्राथमिक कक्षाओं को पढ़ाने में यथेष्ट विविधता है।	1 ()	2 ()
4 प्राथमिक विद्यालयों के अध्यापक हीनभावना से ग्रस्त रहते हैं।	1 ()	2 ()
5 छोटी कक्षाएँ पढ़ाने में अध्यापक को अपने कौशल तथा प्रतिभा के इस्तेमाल के यथेष्ट अवसर होते हैं।	1 ()	2 ()
6 आजकल विद्यार्थी अपने अध्यापकों का यथोचित सम्मान नहीं करते।	1 ()	2 ()
7 प्रतिवर्ष वही पाठ्यक्रम पढ़ाने से मन ऊब जाता है।	1 ()	2 ()
8 प्राइमरी शिक्षक का वेतनमान अच्छा है।	1 ()	2 ()
9 इसी वेतन पर मैं दफ्तर में काम करना अधिक पसन्द करूँगा।	1 ()	2 ()
10 मैं चाहता हूँ कि मेरे बेटे भी अध्यापक बने	1 ()	2 ()

Questionnaire F-7

प्राथमिक विद्यालयों के विद्यार्थियों की उपलब्धियां

कोड

स्तम्भ सं०

7

1

विद्यालय प्रश्नावली

प्रधानअध्यापक/अध्यापिका का नाम

विद्यालय का नाम

केवल प्रोजेक्ट फैलो ही इसे भरे

(1) राज्य

--	--

(2) क्षेत्र

--

(3) जिला

--

(4) शहर/कस्बा/ ब्लाक / तालुक

--	--

.....

--	--

(5) विद्यालय का कोड ...

--	--

पहले रिकार्ड का कोड

1

10

टी. ओ. ए. डमी कोड

7

0

11-12

मापन, मूल्यांकन, सर्वेक्षण एवं आधार सामग्री प्रक्रियण विभाग
राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्

श्री अरविन्द मार्ग, नई दिल्ली ' 110 016

आवश्यक निर्देश :

- 1 एक वर्ग में केवल एक ही अंक लिखें।
- 2 आवश्यकतानुसार कोष्ठक के अन्दर ही सही का निशान लगाए।
- 3 कुछ प्रश्नों के उत्तर देने के लिए पादटिप्पणियों (फुटनोट) में विशेष निर्देश दिए गए हैं। उन प्रश्नों को 'स्टार' चिन्ह से अंकित किया गया है। मांगी गई सूचना भरने से पहले इन टिप्पणियों को ध्यान से पढ़ें।
- 4 इस प्रश्नावली में जो सूचनाएं देनी हैं वे केवल कक्षा 1-4 तक के लिए ही हैं, यद्यपि आपके विद्यालय में चौथी कक्षा के ऊपर की भी कक्षाएं हो सकती हैं।
- 5 संख्याएं लिखने में केवल अंग्रेजी अंक ही प्रयोग में लाएं।

(1 2 3 4 5 6 7 8 9)

- 1 अपनी व्यावसायिक शिक्षा के बारे में जो सबसे अधिक उचित हैं। उचित स्थान पर (✓) का निशान लगाकर जानकारी दें।

13

औपचारिक प्रशिक्षण नहीं हुआ (अप्रशिक्षित)	1	()
माध्यमिक/उच्चतर माध्यमिक के बाद		
एक वर्ष का प्रशिक्षण	2	()
माध्यमिक/ उच्चतर माध्यमिक के बाद		
दो वर्ष का प्रशिक्षण	3	()
बी. एड /एम एड.	4	()

- 2 आपकी आयु कितनी है ?

14

35 वर्ष से कम	1	()
35 से 50 वर्ष तक	2	()
50 वर्ष से अधिक	3	()

- 3 आप कितने वर्ष से पढ़ा रहे हैं? जितने वर्ष आप प्रधानाध्यापक/प्रधानाध्यापिका रहे/रही हैं, उनको भी जोड़िए।

5 वर्ष से कम	1	()
5 वर्ष से 15 वर्ष तक	2	()
15 वर्ष से अधिक	3	()

4	आप कितने वर्षों से प्रधानाध्यापक/प्रधानाध्यापिका हैं?			16
	5 वर्ष से कम	1	()	
	5 वर्ष से 10 वर्ष तक	2	()	
	10 वर्ष से अधिक	3	()	
5	आपका विद्यालय ग्रामीण क्षेत्र में है या शहरी क्षेत्र में ?			17
	ग्रामीण	1	()	
	शहरी	2	()	
6	विद्यालय का प्रशासन किसके आधीन है?			18
	राज्य अथवा केन्द्रीय सरकार	1	()	
	स्थानीय प्रशासन	2	()	
	प्राइवेट सहायता प्राप्त	3	()	
	पूर्णतया प्राइवेट	4	()	
7	आपके विद्यालय में कौनसे बच्चे पढ़ते हैं ?			19
	केवल लड़कियां	1	()	
	केवल लड़के	2	()	
	लड़के और लड़कियां दोनों	3	()	
8	क्या आपके विद्यालय में पूर्व-प्राथमिक कक्षाएं हैं ?			20
	हां	1	()	
	नहीं	2	()	
9	आपके विद्यालय में कौनसी कक्षाएं हैं?			21
	कक्षा एक से चार या पांच तक	1	()	
	कक्षा एक से सात या आठ तक	2	()	
	कक्षा एक से दस या बारह तक	3	()	

10 आपका विद्यालय पिछले कितने वर्षों से
काम कर रहा है?

22

- | | | |
|-----------------------|---|----------|
| 6 वर्ष से कम | 1 | () |
| 6 वर्ष से 10 वर्ष तक | 2 | () |
| 11 वर्ष से 20 वर्ष तक | 3 | () |
| 20 वर्ष से अधिक | 4 | () |

11. * विद्यालय की प्राथमिक कक्षाओं में
प्रति सप्ताह कितने घंटे काम होता है?

23-26

घंटों में

गर्मियों में

सर्दियों में

12 गत शैक्षिक वर्ष (1989-90) में विद्यालय
में कितने दिन काम हुआ ?

27-29

13 * प्रत्येक कक्षा में दाखिल विद्यार्थियों
की संख्या (जिस दिन प्रश्नावली भरी
जा रही है उस तिथि के लिए) दीजिए।
कुल विद्यार्थियों की संख्या के बाद
अनुसूचित जाति और जनजाति के
विद्यार्थियों की संख्या अलग से दीजिए।

कक्षा	कुल विद्यार्थी		अनुसूचित जाति/अनुसूचित जन जाति	
	लड़के	लड़कियां	लड़के	लड़कियां
I	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
II	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
III	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
IV	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
एस यू डी कोड			<input type="text"/> <input type="text"/>	70-71

* प्रश्न संख्या 11 उदाहरण के लिये, यदि आपका विद्यालय सोमवार से शुक्रवार तक प्रातः 7 बजे से 12.30 तक चलता है और शनिवार को 7 बजे से 10.00 बजे तक खुलता है तो सप्ताह में विद्यालय 30 घंटे 30 मिनट काम करता है। उत्तर लिखने में मिनट को छोड़कर केवल घंटे लिखें।

* प्रश्न संख्या 13 जहाँ छात्रों की संख्या 100 से कम हो, जैसे 75 रिक्त वर्ग तीन हों, वहाँ वर्गों में भरे। इसी प्रकार यदि केवल 8 छात्र हों तो 008 भरें।

14 केवल कक्षा 4 के विद्यार्थियों की संख्या

आयु के आधार पर दीजिए।

72-101

	आयु 9 वर्ष तक	9 वर्ष से 10 वर्ष से अधिक 10 वर्ष से कम	11 वर्ष से अधिक 11 वर्ष से कम	12 वर्ष या उससे अधिक 12 वर्ष से कम आयु वाले
लड़के	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
लड़कियाँ	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

15 पहली से चौथी तक की कक्षाओं

के शिक्षकों की संख्या दीजिए।

102-105

	प्रशिक्षित	अप्रशिक्षित
कुल	<input type="text"/>	<input type="text"/>

16 * कक्षा 1 से 4 तक कुल कितने सैक्शन हैं?

106-107

17 कक्षा 1 से 4 के छात्रों के बैठने के लिए कुल कितने कमरे और बरामदे हैं?

108-109

18 क्या प्राध्यापक को दफ्तर के काम करने के लिए अलग कमरा उपलब्ध है?

हाँ ()
नहीं ()

19 क्या विद्यालय में स्टाफ रूम है?

हाँ ()
नहीं ()

* 16. यदि पहली कक्षा में तीन सैक्शन हैं, दूसरी और तीसरी में दो, दो, और चौथी में एक ही सैक्शन है कुल मिलाकर चारों कक्षाओं में 8 सैक्शन हुए। रिक्त स्थान पर 0 8 भरा जाएगा।

20 फर्नीचर की उपलब्धि के विषय में सूचना

निम्नलिखित तालिका में दे

112-114

60 प्रतिशत से कम	60 प्रतिशत से अधिक परन्तु सबके लिए अपर्याप्त	सबके लिए उपलब्ध है
1	2	3

(क) विद्यार्थियों के लिए

1. कुर्सियों/बैच/टाट-पट्टी	[]	[]	[]	[]
2. लिखने और पुस्तकें रखने के लिए डैस्क स्तम्भ के सही निशानों की संख्या	[]	[]	[]	[]

(ख) शिक्षकों के लिए

115-117

1 मेज	[]	[]	[]	[]
2 कुर्सियां	[]	[]	[]	[]
3 सामान रखने के लिए (जैसे अलमारी, सन्दूक आदि)	[]	[]	[]	[]

स्तम्भ के सही निशानों
की संख्या

21. निम्नलिखित सुविधाओं की उपलब्धि

के विषय में जानकारी दें।

(i) पीने का पानी	हाँ	1	()	118
	नहीं	2	()	
(ii) लड़कियों के लिए	हाँ	1	()	119
पेशाबघर की व्यवस्था	नहीं	2	()	
लागू नहीं होता (लड़कियों नहीं पढ़ती)		3	()	

22 निम्नलिखित शिक्षण सामग्री के विषय में उपयुक्त स्थान पर निशान लगाओ।

120-122

	बहुत कम हैं	कुछ कम हैं	पर्याप्त हैं
1 श्याम पट	[]	[]	[]
2 चाक	[]	[]	[]
3 झाड़न	[]	[]	[]
स्तम्भ के सही निशानों की संख्या	[]	[]	[]

23 पुस्तकालय में उपलब्ध पुस्तकों की संख्या दीजिए।

123-126

24 क्या विद्यालय में पाठ्य पुस्तकों का बैक है?

127

हां	(1)
नहीं	(2)

रिकार्ड नं 1 समाप्त

1 से 9 तक की कालम संख्या को रिकार्ड नं. से दोहराएं

दूसरे रिकार्ड का कोड 2 10

25 आपके विद्यालय में जिस कक्षा तक "न फेल करने की नीति" अपनाई जाती है उसपर सही का निशान लगाए।

11

कक्षा	
एक तक	1 ()
दूसरी तक	2 ()
तीसरी तक	3 ()
चौथी तक	4 ()
कक्षा एक से ही फेल जा सकता है	5 ()

आने के लिए प्रोत्साहित करने की
योजनाओं में से आपके विद्यालय में कौन-कौन
सी लागू हैं। उपयुक्त स्थान पर
सही (✓) का निशान लगाए।

	किसी विद्यार्थी के लिए नहीं	कुछ विद्यार्थियों के लिए	सभी विद्यार्थियों के लिए
	1	2	3
1. दोपहर का भोजन	[]	[]	[]
2. नि. शुल्क यूनिफार्म	[]	[]	[]
3. नि. शुल्क पुस्तकें	[]	[]	[]
4. उपस्थिति अनुदान	[]	[]	[]
5. अन्य कोई विवरण दे	[]	[]	[]

स्तम्भ के सही निशानों
की संख्या

लिए कुछ धनराशि मिलती है। गत वर्ष
में स्टेशनरी, डाक-व्यय, खेलकूद, मैडिकल,
भरम्मत, स्कूल के उत्सव आयोजन सम्बन्धी
जो धनराशि आपने व्यय की उसकी जानकारी
दीजिए।

कुल राशि खर्च (केवल रु में)

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28. * नीचे दी गई तालिका में रजिस्टर पर दाखिल
विद्यार्थियों की संख्या एवं उनकी वास्तविक
उपस्थिति का विवरण दे।

20-91

कक्षा	विद्यार्थियों की संख्या	20.8.90	20.11.90	20.1.91
I	रजिस्टर पर	<input type="text"/>	<input type="text"/>	<input type="text"/>
	वास्तविक उपस्थिति	<input type="text"/>	<input type="text"/>	<input type="text"/>
II	रजिस्टर पर	<input type="text"/>	<input type="text"/>	<input type="text"/>
	वास्तविक उपस्थिति	<input type="text"/>	<input type="text"/>	<input type="text"/>
III	रजिस्टर पर	<input type="text"/>	<input type="text"/>	<input type="text"/>
	वास्तविक उपस्थिति	<input type="text"/>	<input type="text"/>	<input type="text"/>
IV	रजिस्टर पर	<input type="text"/>	<input type="text"/>	<input type="text"/>
	वास्तविक उपस्थिति	<input type="text"/>	<input type="text"/>	<input type="text"/>

एस क्यू डमी कोड

7 0

92-93

29. * हिन्दी तथा गणित को प्रति सप्ताह
कितना समय दिया जाता है?
(मिनटों में दे)

94-117

कक्षा	हिन्दी	गणित
I	<input type="text"/>	<input type="text"/>
II	<input type="text"/>	<input type="text"/>
III	<input type="text"/>	<input type="text"/>
IV	<input type="text"/>	<input type="text"/>

एस क्यू डमी कोड

7 0

118-119

* प्रश्न संख्या 28 यदि दी गई तिथियों में विद्यालय में छुट्टी हो तो उससे अगले कार्य दिनों के लिए सूचना दीजिए, चाहे वह कई दिनों के बाद पड़ता हो।

* प्रश्न संख्या 29 सप्ताह में पढ़ाए गये पीरियडों का कुल समय प्रति विषय के पीरियडों की संख्या और एक पीरियड की अवधि को गुणा करके मिनटों में निकालिये।

30. प्राथमिक विद्यालयों में भौतिक सुविधाएँ देने के आशय से आपने ब्लैक बोर्ड के नाम से योजना चल रही है। आप अपने विद्यालय के बारे में इसका ब्यौरा दीजिए।

120

नहीं चल रही	चल रहा है		
	एक वर्ष से कम समय से	एक वर्ष से अधिक परन्तु दो वर्ष से कम	दो वर्ष से अधिक समय से
1	2	3	4
()	()	()	()

31 (क) क्या आपके विद्यालय में शिक्षक अभिभावक संघ है? उपयुक्त स्थान पर सही का निशान लगाइयें।

121

हां

1 ()

नहीं

2 ()

(ख) यदि हां पिछले अध्यापन वर्ष में इसकी कितनी बैठक हुई? उनकी संख्या लिखें।

122

- 32 केन्द्रीय और राज्य सरकारों द्वारा प्राथमिक विद्यालयों में कई योजनाएँ लागू की गई हैं। आपके विद्यालय में भी इनमें से एक या एक से अधिक लागू की गई होंगी। निम्नलिखित तालिका में उपयुक्त स्थान पर सही (✓) का निशान लगाकर इसका ब्यौरा दें।

123-127.

भाग ले रहा है				
कभी भी भाग नहीं लिया	एक वर्ष से कम	एक और दो वर्ष के बीच	दो वर्ष से अधिक	भाग ले रहा था परन्तु अब नहीं
1	2	3	4	5

(क) यूनिसेफ/यू एन एफ.पा योजना

- | | | | | | |
|-----------------|---------|---------|---------|---------|---------|
| 1) एन.एच.ई.ई.एफ | [] | [] | [] | [] | [] |
| 2) पी.ई.सी.आर | [] | [] | [] | [] | [] |
| 3) ई.सी.ई.पी | [] | [] | [] | [] | [] |
| 4) सी.ए.पी.ई | [] | [] | [] | [] | [] |
| 5) एन.पी.ई. | [] | [] | [] | [] | [] |

(ख) कोई दूसरी योजना जो केन्द्रीय,
राजकीय ट्रस्ट या किसी अन्य
संस्था द्वारा चलाई गई हो।

- | | | | | | |
|----|---------|---------|---------|---------|---------|
| 6) | [] | [] | [] | [] | [] |
| 7) | [] | [] | [] | [] | [] |
| 8) | [] | [] | [] | [] | [] |

स्तम्भों में सही
निशानों की संख्या
(1 से 8)

Questionnaire F-8

Attainments of Primary School Children

Code

Col No

STUDENT QUESTIONNAIRE

5

1

Name of the Student..

Father's Name

Date Class

Name of the School

To be filled in by Project Fellow only

1 State

2-3

2. Region

4

3. District

5

4. City/Town/Block/Taluk

6-7

5. School Code

8-9

6. Student Code

10-11

Code for Third Record

3

12

STQ DUMMY CODE

5

0

13-14

The Class Teacher and the Project Fellow will help the students to fill in this Questionnaire

- | | | | |
|------|---|--|-------|
| 7. | Do you live in an urban or rural area? | | 15 |
| | Urban | 1 () | |
| | Rural | 2 () | |
| 8. | Age of the student
(in completed years) | | 16-17 |
| 9. | Are you a boy or a girl? | | |
| | Boy | 1 () | 18 |
| | Girl | 2 () | |
| 10 | Tick (✓) the class which in your are studying | | 19 |
| | Class IV | 4 () | |
| | Class V | 5 () | |
| 11.* | Father's/Guardian's Occupation | <div style="border: 1px solid black; width: 40px; height: 20px; display: inline-block;"></div> | 20 |
| 12. | Tick (✓) the caste to which you belong | | 21 |
| | Scheduled Caste | 1 () | |
| | Scheduled Tribe | 2 () | |
| | Backward Class | 3 () | |
| | Other Communities | 4 () | |
| 13. | Is the language (dialect) you speak at home the same or different from the medium of instruction? | | 22 |
| | Same | 1 () | |
| | Different | 2 () | |
| 14. | Did you attend any school before joining Class I? | | 23 |
| | Yes | 1 () | |
| | No | 2 () | |

* Item No. 11 The coded list of occupations is given at the end of the Questionnaire. The teacher and the Project Fellow would help the students to write the appropriate code for father's occupation.

15 Tick (✓) your Parent's/ Guardian's level of education

24-25

Education Level	Father / Guardian	Mother
Illiterate	1 ()	2 ()
Primary	2 ()	3 ()
Below Matric	3 ()	3 ()
Matric	4 ()	4 ()
Hr /Sr Secondary	5 ()	5 ()
B.A./B Sc /B Com. etc.	6 ()	6 ()
M.A/M Sc/M.Com Doctor Engineer etc	7 ()	7 ()

16. How many brothers and sisters are you (including yourself)?

26

One to two	1 ()
Three to four	2 ()
More than four	3 ()

17. Do you have a separate place or room where you can study?

27

Yes	1 ()
No	2 ()

18. Does someone in your family help you in your homework given by the school?

28

Yes	1 ()
No	2 ()

19. Do you have textbooks?

29

Yes, I have most of them.	1 ()
I have some of them.	2 ()
I have very few of them.	3 ()

- 20 Do you get exercise books (copies) and other writing material ? 30
Tick (✓) whichever is applicable in your case
- | | | |
|--------------------------|---|----------|
| Yes, I get most of them. | 1 | () |
| I get some of them | 2 | () |
| I get very few of them. | 3 | () |
- 21 If you help your parents at home, in the fields or in the shop, 31
indicate the number of hours spent in this activity per day.
- | | | |
|----------------------|---|----------|
| Less than two hours | 1 | () |
| Two to four hours | 2 | () |
| More than four hours | 3 | () |
22. Do you go to school regularly? 32
- | | | |
|-------------------------------------|---|----------|
| Yes, almost regularly. | 1 | () |
| I have to miss school occasionally. | 2 | () |
| I have to miss school frequently. | 3 | () |
- 23 Is a newspaper received at your home? 33
- | | | |
|-----|---|----------|
| Yes | 1 | () |
| No | 2 | () |
24. Are any magazines available at your home? 34
- | | | |
|-----|---|----------|
| Yes | 1 | () |
| No | 2 | () |

- 25 If there are books other than textbooks available at your home, tick (✓) whichever is applicable in your case 35
- | | | |
|--------------------------|---|-----|
| There are no other books | | |
| in my house | 1 | () |
| Below 20 books | 2 | () |
| 20 to 50 books | 3 | () |
| 50 to 100 books | 4 | () |
| 100 books and above | 5 | () |
26. Do you read books other than textbooks? 36
- | | | |
|------|---|-----|
| No | 1 | () |
| Some | 2 | () |
| Many | 3 | () |
27. How many hours do you watch television daily? 37
- | | | |
|-----------------------------|---|-----|
| There is no TV in my house. | 1 | () |
| Less than one hour | 2 | () |
| One to two hours | 3 | () |
| More than two hours | 4 | () |

LIST OF OCCUPATIONS

Code No.	Occupation
1. Professionals	: Doctor, Engineer, Teacher, Librarian, Scientist, Author, Accountant, Artist
2. Administrators (Senior)	: Gazetted Officer, Defence Services Officer, Business Executive, Police Officer, Administrative Officer
3. Businessmen and Traders	: Proprietor of small and large Business Houses, Wholesaler, Contractor, Shopkeeper
4. Agriculturists	: Small and Big Farmer
5. Administrators (Junior)	: Salesman, Clerk, Typist, Steno-Typist, Cashier, Conductor, Insurance Agent, Compounder, Nurse, Surveyor
6. Skilled and semi-skilled workers	: Mechanic, Driver, Mason, Plumber, Photographer, Painter, Craftsman, Telephone/Machine Operator, Shoemaker, Potter, Blacksmith, Carpenter, Weaver, Tailor, Dyer
7. Unskilled workers	: Labourer, Watchman, Gardener, Vendor
8. Others	: Persons unemployed or engaged in any other work.

Questionnaire F-9
Attainments of Primary School Children

Code

Col. No.

TEACHER QUESTIONNAIRE

6

1

Name of the Teacher :

Name of the School :

Date :

2-10

To be filled in by the Project Fellow

1. State :

--	--

2. Region :

--

3. District :

--

4. City/Town/Block :

--	--

5. School Code :

--	--

6. Teacher Code :

--

Code for first record

1

Please provide the following information about yourself.
Put a tick (✓) in the appropriate bracket

TO DUMMY CODE	6	1
---------------	---	---

12-13

PART A

7	Is your school in an urban or rural area?		14
	Urban	1 ()	
	Rural	2 ()	
8.	Sex		15
	Male	1 ()	
	Female	2 ()	
9	Age		16
	Less than 35 years	1 ()	
	35 - 50 years	2 ()	
	More than 50 years	3 ()	
10	Educational Qualification		17
	Below High School	1 ()	
	High School	2 ()	
	Senior Secondary (XI to XII)	3 ()	
	B A./B.Sc./B. Com. and above	4 ()	
11*	Which training course have you completed? If you have done more than one course, e.g., J.B.T. and B.Ed., please put a tick (4) (only one) at the higher course level :		18
	One year training after Secondary / Senior Secondary	1 ()	
	Two years training after Secondary / Senior Secondary	2 ()	
	B.T/B.Ed. (One year)	3 ()	
	B Ed. (Four years)	4 ()	
	Others	5 ()	

* Item No 11 Completion of one-year training course in BSB Changlang may also be treated as "one year training after Secondary/Senior Secondary".

12 For how many years have you been teaching?

19

- | | |
|--------------------|-----------|
| Less than 5 years | 1 () |
| 5-10 years | 2 () |
| 11-20 years | 3 () |
| More than 20 years | 4 () |

13. Where were you educated?

20-22

	Rural	Small city/town	Big city
i) Primary	[]	[]	[]
ii) Secondary/Sr. Secondary	[]	[]	[]
iii) Professional	[]	[]	[]
<hr/>			
Total number of ticks (i-iii)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

14. Till today, where have you taught for most of the time?

23

- | | |
|-----------------|-----------|
| Rural area | 1 () |
| Town/Small city | 2 () |
| Big city | 3 () |

15.* Have you received any in-service training?

24

- | | |
|-----|-----------|
| Yes | 1 () |
| No | 2 () |

Item No 15 . In-service training programmes are those short-period training courses which are given to serving teachers to update their teaching.

16 If yes, please provide details in the following table

25-30

S.No.	Subject Attended	Number of Programmes (number of days)	Total Duration
1	English	<input type="text"/>
2	Maths.	<input type="text"/>
3	Others	<input type="text"/>

17. You may have preference for teaching some subjects as compared to others. In the table given below, rank the subjects according to your preference for teaching the same. For example, if you like teaching general science most, give it rank 1. If teaching mathematics is your next preference it will get rank 2, and so on. In the second column, mention the total number of periods being taught by you in each subject.

31-42

S. No	Subject	Rank	Total periods taken per week
1	English	<input type="text"/>	<input type="text"/>
2.	Mathematics	<input type="text"/>	<input type="text"/>
3.	Social Studies	<input type="text"/>	<input type="text"/>
4.	General Science	<input type="text"/>	<input type="text"/>

18. How much time do you spend daily in coming to your school and going back home?

43

Half an hour	1 ()
Between half and one hour	2 ()
Between one to two hours	3 ()
Between two to three hours	4 ()
More than three hours	5 ()

PART B

The questions below are related to the teaching-learning process. Answer these questions frankly and honestly on the basis of your teaching experience

1. Have you tried to teach in a manner other than the traditional way of teaching? 46

Yes	1	()	
No	2	()	

2. If yes, in what way did the students benefit?
 - (a) Students' educational performance improved 47

Yes	1	()	
No	2	()	

 - (b) Students started taking interest in the subject(s) 48

Yes	1	()	
No	2	()	

3. Do you use teaching aids? 49

Yes, often.	1	()	
Yes, sometimes	2	()	
Rarely	3	()	

4. Have you prepared any teaching aids for your classes? 50

Yes, quite a few	1	()	
Yes, some	2	()	
No, the time is not available.	3	()	

OR

The school does not provide any material for it

5. Have you got teaching aids prepared by your students? 51

Yes, sometimes. 1 ()

No, children are too young.

OR 2 ()

The material is not available

6. How frequently do you evaluate the academic performance of your students? 52

Once a year. 1 ()

Two or three times a year. 2 ()

Monthly or more frequently. 3 ()

7. In what way information available from examinations is used? 53
(Tick more than one, if necessary)

(i) For promotion []

(ii) For remedial teaching. []

(iii) For ascertaining weakness in teaching. []

Total number of ticks (i-iii)

--	--

8. Give details of what you are able to read besides textbooks 54-56

Read material	Regularly	Sometimes	Rarely
i) Newspapers	[]	[]	[]
ii) Magazines	[]	[]	[]
iii) Novels, Poetry, Drama, Story Books, etc.	[]	[]	[]
iv) Subject-related periodicals	[]	[]	[]
Total number of ticks (i-iv)	[]	[]	[]

9	Do you have textbooks?		57
	Yes, I have my own books.	1 ()	
	Yes, I borrow from the library.	2 ()	
	No, I use students' books	3 ()	
10.	Do you have a dictionary (In the language you teach)?		58
	Yes, I have my own.	1 ()	
	Yes, it is available in the school	2 ()	
	A dictionary is not available to me.	3 ()	
11.	How do you help weak students in their studies?		59
	By giving them extra attention in class.		
	OR	1 ()	
	By taking extra classes after school hours		
	By asking parents to arrange tuitions for their wards	2 ()	
12.	Do you check the homework of your students?		60
	Regularly	1 ()	
	Sometimes	2 ()	
	Rarely	3 ()	
	I do not have the time.		
13.	Do students ask questions in your class?		61
	Yes, quite frequently	1 ()	
	Sometimes	2 ()	
	Rarely	3 ()	

PART C

The following statements refer to teaching in the primary classes. Read each statement carefully and express your feeling honestly by putting a tick (✓) below "Agree" (1) or "Disagree" (2)

	Agree	Disagree
1. I like teaching in primary school because there is less workload.	1 ()	2 ()
2. The primary school teacher enjoys social status.	1 ()	2 ()
3. There is sufficient variety in teaching primary classes.	1 ()	2 ()
4. Primary school teachers suffer from inferiority complex.	1 ()	2 ()
5. There are adequate opportunities to utilise one's talent and skills in teaching primary school children.	1 ()	2 ()
6. Children do not respect their teachers these days.	1 ()	2 ()
7. It becomes monotonous to teach the same things every year.	1 ()	2 ()
8. The salary of primary school teachers is quite good.	1 ()	2 ()
9. I would rather work in an office than as a teacher in the same scale of pay.	1 ()	2 ()
10. I wish my sons would also become teachers.	1 ()	2 ()

Questionnaire F-10

Attainments of Primary School Children

SCHOOL QUESTIONNAIRE

Code

Col No.

7

1

Name of the Headmaster/Headmistress

Name of the School

2-9

To be filled in by the Project Fellow only

- | | | | |
|---|-----------------------------|--|--|
| 1 | State | | |
| 2 | Region | | |
| 3 | District | | |
| 4 | City/Town/Block/Taluk | | |
| 5 | School Code | | |

CODE FOR FIRST RECORD

1

10

SQ DUMMY CODE

7

0

11-12

Important Instructions

- 1 Write only one digit in each square
- 2 Put ticks within brackets wherever required.
- 3 Specific directions have been given for responding to some of the questions in footnotes. These questions have been marked with a star (*) Read the footnotes carefully before filling in the required information.
- 4 If your school has classes higher than Class IV, information in this questionnaire should pertain to Classes I to IV only.
- 5 All numbers must be written in Arabic numerals (1 2 3 4 5 6 7 8 9).

1. Tick (✓) whichever describes your professional education best : 13

Untrained	1	()
One year training after Sec./Sr Sec	2	()
Two years training after Sec /Sr Sec.	3	()
B.Ed. or M.Ed.	4	()

2. How old are you? 14

Less than 35 years	1	()
35 years to 50 years	2	()
Above 50 years	3	()

3. For how many years have you been teaching?
(including the number of years you have been
a head teacher) 15

Less than 5 years	1	()
5 to 15 years	2	()
More than 15 years	3	()

4. For how many years have you been a head teacher? 16

Less than 5 years	1	()
5 to 10 years	2	()
More than 10 years	3	()

5	Is your school in a rural or urban area?		17
	Rural	1 ()	
	Urban	2 ()	
6	Which of the following best describes the administrative status of your school?		18
	Managed by the State or Central Government	1 ()	
	Managed by Local Body	2 ()	
	Private Aided	3 ()	
	Private Unaided	4 ()	
7	Does your school admit		19
	Girls only ?	1 ()	
	Boys only ?	2 ()	
	Boys and girls both ?	3 ()	
8	Does your school have nursery classes attached to it?		20
	Yes	1 ()	
	No	2 ()	
9	Which classes do you have in your school?		21
	Classes I to IV or V	1 ()	
	Classes I to VII or VIII	2 ()	
	Classes I to X or XII	3 ()	
10.	Number of years the school has been in existence.		22
	Less than 6 years	1 ()	
	6 to 10 years	2 ()	
	11 to 20 years	3 ()	
	More than 20 years	4 ()	

11.* What are the working hours per week for the primary classes in your school?

23-26

(in hours)

Summer		
Winter		

12. How many working days were there in the last academic year (1989-90) ?

27-29

13.* Give class-wise enrolment (as on the date of filling in the questionnaire)30-69.

	All		SC and ST	
	Class	Boy	Boys	Girls
I				
II				
III				
IV				

SQ DUMMY CODE	7	0
---------------	---	---

70-71

14. Give age-wise enrolment for Class IV only

72-101

Age	Upto 9 years	9 + but less than 10 years	10 + but less than 11 years	11 + but less than 12 years	12 + and above
Boys					
Girls					

15 Give the number of teachers who are teaching Classes I to IV

102-105

	Trained	Untrained
Total		

* Item No. 11 Fore example, if the school timings are from 7.00 A.M. to 12.30 noon for five days and from 7 00 A.M. to 10 00 A.M. on sixth day, the total working hours of the school per week work out to be 30 hours 30 minutes but we shall write 30 hrs. only Hours are to be reported and minutes are to be dropped.

* Item No. 13 In case the number of students in any column is less than 100, e.g. 75, then fill up the column like this 075 Similarly, if the number of girls in a class is only 8, please write 008 .

- 16.* How many class groups (including sections) do you have for Classes I-IV? 106-110
- 17 How many rooms including verandahs, are used as classrooms for Classes I to IV? 108-109
- 18 Does the head teacher have a separate room as his office 110
- Yes 1 ()
- No 2 ()
19. Is there a staff room in the school? 111
- Yes 1 ()
- No 2 ()
20. Tick (✓) the appropriate column regarding availability of furniture

	less than 60%	more than 60% but not for all	for everyone	
	1	2	3	
(A) FOR STUDENTS				112-114
(i) Chairs/Benches Mats for seating	[]	[]	[]	
(ii) Desks for writing/ keeping books	[]	[]	[]	
Total number of ticks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
(B) FOR TEACHERS				115-117
(i) Tables	[]	[]	[]	
(ii) Chairs	[]	[]	[]	
(iii) Furniture for storing such as cupboard, almirah, box, trunk, etc.	[]	[]	[]	
Total number of ticks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

* Item No. 16 If there are 3 sections of Class I, 2 sections each in Classes II and III and only 1 section of Class IV, there are 8 class groups of Classes I to IV, and 08 should be written in the space provided.

21. Tick (✓) the availability of amenities in your school 118

(i) Drinking water	Yes	1 ()	
	No	2 ()	
(ii) Urinals for girls	Yes	1 ()	119
	No	2 ()	
	Not applicable (there are no girl students)	3 ()	

22. Tick (✓) the appropriate column regarding availability of teaching/instructional aids 120-122

	Highly inadequate 1	Somewhat inadequate 2	Adequate 3
1. Blackboard	[]	[]	[]
2. Chalk	[]	[]	[]
3. Duster	[]	[]	[]

Total number of ticks

23. Give the number of books in the school library

123-126

24. Does your schools have a Textbook Bank?

127

Yes	1 ()
No	2 ()

* * * * * END OF RECORD NO. 1	
REPEAT COLUMNS 1-9 FROM RECORD NO. 1	
CODE FOR SECOND RECORD	10

25. Tick the class upto which Non-detention Policy is followed in your school 11

Class	Code
Upto	1 ()
Upto II	2 ()
Upto III	3 ()
Upto IV	4 ()
Students can be failed even in Class I	5 ()

- 26 Which incentive schemes are being operated in your school?
Tick (✓) the appropriate column which is applicable

12-14

	For none	For some students	For all students
	1	2	3
i) Mid-day meal	[]	[]	[]
ii) Free uniform	[]	[]	[]
iii) Free textbooks	[]	[]	[]
iv) Attendance scholarship	[]	[]	[]
v) Any other (please specify) []	[]	[]	[]
Total number of ticks	<input type="text"/>	<input type="text"/>	<input type="text"/>

27. Give the amount spent by you during the last academic year for contingency, such as stationary, postage, games, sports, medical, maintenance, school functions, etc

15-19

Amount

Total amount spent (In Rs only)

28 * ATTENDANCE

20-91

Class	No. of students	20.8 90	21.11 90	20.1.91
I	On rolls	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
	Present	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
II	On rolls	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
	Present	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
III	On rolls	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
	Present	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
IV	On rolls	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>
	Present	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/> <input type="text"/>

*Item No 28 : If the school is closed on any of the specified dates information may be given for the next working day even if it falls after several days.

SQ DUMMY CODE

7 0

92-93

- 29 * Give information about allotment of teaching time per week (in minutes)

94-117

Class

First Language

Mathematics

I

--	--	--

--	--	--

II

--	--	--

--	--	--

III

--	--	--

--	--	--

IV

--	--	--

--	--	--

SQ DUMMY CODE

7 0

118-119

30. Give information about the Operation Blackboard scheme
Tick (✓) the appropriate column

120

Not in Operation	In Operation		
	Less than one year	Between one and two years	More than two years
1	2	3	4
()	()	()	()

31. (a) Does your school have a Parent Teacher Association?

121

Yes

1 ()

No

2 ()

- (b) If yes, how many meetings were organised in the last academic year

122

* Item No 29 : Work out teaching time by multiplying the number of periods in each subject per week by duration of the period in minutes

- 32 Several innovative schemes have been tried out in primary schools by the Central or State governments. Your school might have participated in one or more of these. Provide relevant information by putting a tick at the appropriate place in each row

123-127

	It was never in operation in my school	In operation			Was operating but not now
		Less than one year	Between one and two years	More than two years	
(A) UNICEF/UNFPA	1	2	3	4	5
i) Nutrition, Health, Education and Environmental Sanitation (NHEES)	[]	[]	[]	[]	[]
ii) Primary Education Curriculum Renewal (PECR)	[]	[]	[]	[]	[]
iii) Early Childhood Education Project (ECEP)	[]	[]	[]	[]	[]
iv) Comprehensive Access to Primary Education (CAPE)	[]	[]	[]	[]	[]
v) National Population Education Project (NPEP)	[]	[]	[]	[]	[]
B) Any other innovative Project run by Centre/State/Trust/Management/Institution etc.					
vi)	[]	[]	[]	[]	[]
vii)	[]	[]	[]	[]	[]
viii)	[]	[]	[]	[]	[]
Total Number of Ticks (i to viii)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Director of Education

20-11-95

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